Project Manual for:
VA Medical Center
Iron Mountain, Michigan
Repair Exterior Masonry – Outbuildings
VA Project 138-08-121

Issued:
January 13, 2009
100% Construction Documents

NDW Project Number:
0818

Prepared By:

northern Design Works

420 Rail Street
Negaunee, MI 49866
906-475-6616
906-475-6954 Fax
WWW.NDW.US

Section 00 01 10
Table of Contents

Not Used

Division 13 – Special Construction

Not Used

Division 14 – Conveying Equipment

Not Used

Division 21 – Fire Suppression

Not Used

Division 22 – Plumbing

Not Used

Division 23 – Heating, Ventilating, and Air Conditioning

Not Used

Division 26 – Electrical

Not Used

Division 27 – Communications

Not Used

Division 28 – Electronic Safety and Security

Not Used

Division 31 – Earthwork

Not Used

Division 32 – Exterior Improvements

Not Used

Division 33 – Utilities

Not Used

End of Section

SECTION 010100
GENERAL REQUIREMENTS

TABLE OF CONTENTS

SECTION 010100
GENERAL REQUIREMENTS

1.1 GENERAL INTENTION

A. Provide for and furnish all labor, superintendence, materials, tools, equipment, transportation, licenses, certificates, insurance, temporary protection, and other items designated under the provisions of this contract Repair Exterior Masonry Project No. 585-09-114. Contractor shall repair the exterior masonry on buildings # 2,3,4,5, &6 including demolition and removal of all materials and furnish labor and materials as required by drawings and specifications.

B. Visit to the site by Bidders information is located on the solicitation cover. Verify existing conditions and locations in field prior to submitting proposal.

C. Offices of Northern Design Works, 420 Rail St., Negaunee, MI 49866 as Architect-Engineers will render certain technical services during construction. Such services shall be considered as advisory to the Government and shall not be construed as expressing or implying a contractual act of the Government without affirmations by Contracting Officer or his duly authorized representative.

D. Before placement and installation of work subject to tests by testing laboratory retained by Department of Veterans Affairs, the Contractor shall notify the Resident Engineer in sufficient time to enable testing laboratory personnel to be present at the site in time for proper taking and testing of specimens and field inspection. Such prior notice shall be not less than three work days unless otherwise designated by the Resident Engineer.

E. All employees of general contractor and subcontractors shall comply with VA security management program and obtain permission of the VA police, be identified by project and employer, and restricted from unauthorized access.

F. Prior to commencing work, general contractor shall provide proof that a OSHA certified "competent person" (CP) (29 CFR 1926.20(b)(2) will maintain a presence at the work site whenever the general or subcontractors are present.

G. Training:

1. All employees of general contractor or subcontractors shall have the 10-hour or 30-hour OSHA certified Construction Safety course and /or other relevant competency training, as determined by VA CP with input from the ICRA team.
2. Submit training records of all such employees for approval before the start of work.

1.2 STATEMENT OF BID ITEM(S)

See solicitation for specific information.

1.3 SPECIFICATIONS AND DRAWINGS FOR CONTRACTOR

A. AFTER AWARD OF CONTRACT, 3 sets of specifications and drawings will be furnished.

B. Additional sets of drawings may be made by the Contractor, at Contractor's expense, from CD Rom furnished by Issuing Office.

1.4 CONSTRUCTION SECURITY REQUIREMENETS

A. Security Plan:

1. The security plan defines both physical and administrative security procedures that will remain effective for the entire duration of the project.
2. The General Contractor is responsible for assuring that all sub-contractors working on the project and their employees also comply with these regulations.

B. Security Procedures:

1. General Contractor’s employees shall not enter the project site without appropriate badge. They may also be subject to inspection of their personal effects when entering or leaving the project site.
2. For working outside the “regular hours” as defined in the contract, The General Contractor shall give 3 days notice to the Contracting Officer so that security can be provided for the employees. This notice is separate from any notices required for utility shutdown described later in this section.
3. No photography of VA premises is allowed without written permission of the Contracting Officer.
4. VA reserves the right to close down or shut down the project site and order General Contractor’s employees off the premises in the event of a national emergency. The General Contractor may return to the site only with the written approval of the Contracting Officer.

C. Document Control:

1. Before starting any work, the General Contractor/Sub Contractors shall submit an electronic security memorandum describing the approach to following goals and maintaining confidentiality of “sensitive information”.
2. The General Contractor is responsible for safekeeping of all drawings, project manual and other project information. This information shall be shared only with those with a specific need to accomplish the project.
3. Certain documents, sketches, videos or photographs and drawings may be marked “Law Enforcement Sensitive” or “Sensitive Unclassified”. Secure such information in separate

containers and limit the access to only those who will need it for the project. Return the information to the Contracting Officer upon request.

4. These security documents shall not be removed or transmitted from the project site without the written approval of Contracting Officer.
5. All paper waste or electronic media such as CD's and diskettes shall be shredded and destroyed in a manner acceptable to the VA.
6. Notify Contracting Officer and Site Security Officer immediately when there is a loss or compromise of "sensitive information".
7. All electronic information shall be stored in specified location following VA standards and procedures using an Engineering Document Management Software (EDMS).
    a. Security, access and maintenance of all project drawings, both scanned and electronic shall be performed and tracked through the EDMS system.
    b. "Sensitive information" including drawings and other documents may be attached to e-mail provided all VA encryption procedures are followed.

D. Motor Vehicle Restrictions:

1. Vehicle authorization request shall be required for any vehicle entering the site and such request shall be submitted 24 hours before the date and time of access. Access shall be restricted to picking up and dropping off materials and supplies at the Engineering Parking lot. All contractor parking shall be in the south contractor parking area behind Building 1.

1.5 FIRE SAFETY

A. Applicable Publications: Publications listed below form part of this Article to extent referenced. Publications are referenced in text by basic designations only.

1. American Society for Testing and Materials (ASTM):
   E84-2008..... Surface Burning Characteristics of Building Materials
2. National Fire Protection Association (NFPA):
   10-2006..... Standard for Portable Fire Extinguishers
   30-2007..... Flammable and Combustible Liquids Code
   51B-2003..... Standard for Fire Prevention During Welding, Cutting and Other Hot Work
   70-2007..... National Electrical Code
   241-2004..... Standard for Safeguarding Construction, Alteration, and Demolition Operations

3. Occupational Safety and Health Administration (OSHA):
   29 CFR 1926..... Safety and Health Regulations for Construction

B. Fire Safety Plan: Establish and maintain a fire protection program in accordance with 29 CFR 1926. Prior to start of work, prepare a plan detailing project-specific fire safety measures, including periodic status reports, and submit to Project Engineer and Facility Safety Manager for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES Prior to any worker for the contractor or subcontractors beginning work, they shall undergo a safety briefing provided by the general contractor's competent person per OSHA requirements. This briefing shall include information on the construction limits, VAMC safety guidelines, means of egress, break areas, work hours, locations of restrooms, use of VAMC equipment, etc. Documentation shall be provided to the Resident Engineer that individuals have undergone contractor's safety briefing.

C. Site and Building Access: Maintain free and unobstructed access to facility emergency services and for fire, police and other emergency response forces in accordance with NFPA 241.

D. Separate temporary facilities, such as trailers, storage sheds, and dumpsters, from existing buildings and new construction by distances in accordance with NFPA 241. For small facilities with less than 6 m (20 feet) exposing overall length, separate by 3m (10 feet).

E. Temporary Construction Partitions:

1. Install and maintain temporary construction partitions to provide smoke-tight separations between construction areas the areas that are described in phasing requirements and adjoining areas. Construct partitions of gypsum board or treated plywood (flame spread rating of 25 or less in accordance with ASTM E84) on both sides of fire retardant treated wood or metal steel studs. Extend the partitions through suspended ceilings to floor slab deck or roof. Seal joints and penetrations. At door openings, install Class C, ¾ hour fire/smoke rated doors with self-closing devices.
2. Install temporary construction partitions as shown on drawings to maintain integrity of existing exit stair enclosures, exit passageways, fire-rated enclosures of hazardous areas, horizontal exits, smoke barriers, vertical shafts and openings enclosures.
3. Close openings in smoke barriers and fire-rated construction to maintain fire ratings. Seal penetrations with listed through-penetration firestop materials.

F. Temporary Heating and Electrical: Install, use and maintain installations in accordance with 29 CFR 1926, NFPA 241 and NFPA 70.

G. Means of Egress: Do not block exiting for occupied buildings, including paths from exits to roads. Minimize disruptions and coordinate with Project Engineer and facility Safety Manager.

H. Egress Routes for Construction Workers: Maintain free and unobstructed egress. Inspect daily. Report findings and corrective actions weekly to Project Engineer and facility Safety Manager.

I. Fire Extinguishers: Provide and maintain extinguishers in construction areas and temporary storage areas in accordance with 29 CFR 1926, NFPA 241 and NFPA 10.

J. Flammable and Combustible Liquids: Store, dispense and use liquids in accordance with 29 CFR 1926, NFPA 241 and NFPA 30.

K. Existing Fire Protection: Do not impair automatic sprinklers, smoke and heat detection, and fire alarm systems, except for portions immediately under construction, and temporarily for connections. Provide fire watch for impairments more than 4 hours in a 24-hour period. Request interruptions in accordance with Article, OPERATIONS AND STORAGE AREAS, and coordinate with Project Engineer and facility Safety Manager. All existing or temporary fire protection systems (fire alarms, sprinklers) located in construction areas shall be tested as coordinated with the medical center. Parameters for the testing and results of any tests performed shall be recorded by the medical center and copies provided to the Resident Engineer.

L. Smoke Detectors: Prevent accidental operation. Remove temporary covers at end of work operations each day. Coordinate with Project Engineer and facility Safety Manager.

M. Hot Work: Perform and safeguard hot work operations in accordance with NFPA 241 and NFPA 51B. Coordinate with Project Engineer. Obtain permits from Engineer at least one hour in advance.

N. Fire Hazard Prevention and Safety Inspections: Inspect entire construction areas weekly. Coordinate with, and report findings and corrective actions weekly to Project Engineer and facility Safety Manager.

O. Smoking: Smoking is prohibited in and adjacent to construction areas inside existing buildings and additions under construction. In separate and detached buildings under construction, smoking is prohibited except in designated smoking rest areas.

P. Dispose of waste and debris in accordance with NFPA 241. Remove from buildings daily.

Q. Perform other construction, alteration and demolition operations in accordance with 29 CFR 1926.

R. If required, submit documentation to the Resident Engineer that personnel have been trained in the fire safety aspects of working in areas with impaired structural or compartmentalization features.

1.6 OPERATIONS AND STORAGE AREAS

A. The Contractor shall confine all operations (including storage of materials) on Government premises to areas authorized or approved by the Contracting Officer. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.

B. Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the Contracting Officer and shall be built with labor and materials furnished by the Contractor without expense to the Government. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the Contracting Officer, the buildings and utilities may be abandoned and need not be removed.

C. The Contractor shall, under regulations prescribed by the Contracting Officer, use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the Contracting Officer. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

(FAR 52.236-10)

D. Working space and space available for storing materials shall be as determined by the Resident Engineer.

E. Workmen are subject to rules of Medical Center applicable to their conduct. Execute work in such a manner as to interfere as little as possible with work being done by others. Keep roads clear of construction materials, debris, standing construction equipment and vehicles at all times.

F. Execute work so as to interfere as little as possible with normal functioning of Medical Center as a whole, including operations of utility services, fire protection systems and any existing equipment, and with work being done by others. Use of equipment and tools that transmit vibrations and noises through the building structure, are not permitted in buildings that are occupied, during construction, jointly by patients or medical personnel, and Contractor's personnel, except as permitted by Resident Engineer where required by limited working space.

1. Do not store materials and equipment in other than assigned areas.

2. Schedule delivery of materials and equipment to immediate construction working areas within buildings in use by Department of Veterans Affairs in quantities sufficient for not more than two work days.

G. Scheduling: To insure such executions, Contractor shall furnish the Resident Engineer with a schedule of approximate schedule in Project 2007 format with dates on which the Contractor intends to accomplish work in each specific area of site, building or portion thereof. Normal working hours are from 7 am to 4:30 pm for this project. In addition, Contractor shall notify the Resident Engineer two weeks in advance of the proposed date of starting work in each specific area of site, building or portion thereof.

Contractor shall take all measures and provide all material necessary for protecting existing equipment and property in affected areas of construction against dust and debris, so that equipment and affected areas to be used in the Medical Centers operations will not be hindered. Contractor shall permit access to Department of Veterans Affairs personnel and patients through other construction areas which serve as routes of access to such affected areas and equipment. Coordinate alteration work in areas occupied by Department of Veterans Affairs so that Medical Center operations will continue during the construction period.

H. Utilities Services: Maintain existing utility services for Medical Center at all times. Provide temporary facilities, labor, materials, equipment, connections, and utilities to assure uninterrupted services. Where necessary to cut existing water, steam, gases, sewer or air pipes, or conduits, wires, cables, etc. of utility services or of fire protection systems and communications systems (including telephone), they shall be cut and capped at suitable places where shown; or, in absence of such indication, where directed by Resident Engineer.

1. No utility service such as water, gas, steam, sewers or electricity, or fire protection systems and communications systems may be interrupted without prior approval of Resident Engineer. Electrical work shall be accomplished with all affected circuits or equipment de-energized. When an electrical outage cannot be accomplished, work on any energized circuits or equipment shall not commence without the Medical Center Director’s prior knowledge and written approval. Refer to specification Sections 26 05 11, REQUIREMENTS FOR ELECTRICAL INSTALLATIONS for additional requirements.
2. Contractor shall submit a request to interrupt any such services to Resident Engineer, in writing, 48 hours in advance of proposed interruption. Request shall state reason, date, exact time of, and approximate duration of such interruption.

3. Contractor will be advised (in writing) of approval of request, or of which other date and/or time such interruption will cause least inconvenience to operations of Medical Center. Interruption time approved by Medical Center may occur at other than Contractor's normal working hours.
4. Major interruptions of any system must be requested, in writing, at least 15 calendar days prior to the desired time and shall be performed as directed by the Resident Engineer.
5. In case of a contract construction emergency, service will be interrupted on approval of Resident Engineer. Such approval will be confirmed in writing as soon as practical.

I. Abandoned Lines: All service lines such as wires, cables, conduits, ducts, pipes and the like, and their hangers or supports, which are to be abandoned but are not required to be entirely removed, shall be sealed, capped or plugged. The lines shall not be capped in finished areas, but shall be removed and sealed, capped or plugged in ceilings, within furred spaces, in unfinished areas, or within walls or partitions; so that they are completely behind the finished surfaces.

J. To minimize interference of construction activities with flow of Medical Center traffic, comply with the following:
1. Keep roads, walks and entrances to grounds, to parking and to occupied areas of buildings clear of construction materials, debris and standing construction equipment and vehicles.

K. Coordinate the work for this contract with other construction operations as directed by Resident Engineer. This includes the scheduling of traffic and the use of roadways, as specified in Article 1.16, USE OF ROADWAYS.

1.7 ALTERATIONS

A. Survey: Before any work is started, the Contractor shall make a thorough survey with the Resident Engineer areas of buildings in which alterations occur and areas which are anticipated routes of access, and furnish a report, signed by both, to the Contracting Officer. This report shall list by rooms and spaces:
1. Existing condition and types of resilient flooring, doors, windows, walls and other surfaces not required to be altered throughout affected areas of building.
2. Existence and conditions of items such as plumbing fixtures and accessories, electrical fixtures, equipment, venetian blinds, shades, etc., required by drawings to be either reused or relocated, or both.
3. Shall note any discrepancies between drawings and existing conditions at site.

4. Shall designate areas for working space, materials storage and routes of access to areas within buildings where alterations occur and which have been agreed upon by Contractor and Resident Engineer.

B. Any items required by drawings to be either reused or relocated or both, found during this survey to be nonexistent, or in opinion of Resident Engineer to be in such condition that their use is impossible or impractical, shall be furnished and/or replaced by Contractor with new items in accordance with specifications which will be furnished by Government. Provided the contract work is changed by reason of this subparagraph B, the contract will be modified accordingly, under provisions of clause entitled "DIFFERING SITE CONDITIONS" (FAR 52.236-2) and "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) of Section 00 72 00, GENERAL CONDITIONS.

C. Re-Survey: Thirty days before expected partial or final inspection date, the Contractor and Resident Engineer together shall make a thorough re-survey of the areas of buildings involved. They shall furnish a report on conditions then existing, of resilient flooring, doors, windows, walls and other surfaces as compared with conditions of same as noted in first condition survey report:

1. Re-survey report shall also list any damage caused by Contractor to such flooring and other surfaces, despite protection measures; and, will form basis for determining extent of repair work required of Contractor to restore damage caused by Contractor's workmen in executing work of this contract.

D. Protection: Provide the following protective measures:

1. Wherever existing roof surfaces are disturbed they shall be protected against water infiltration. In case of leaks, they shall be repaired immediately upon discovery.
2. Temporary protection against damage for portions of existing structures and grounds where work is to be done, materials handled and equipment moved and/or relocated.
3. Protection of interior of existing structures at all times, from damage, dust and weather inclemency. Wherever work is performed, floor surfaces that are to remain in place shall be adequately protected prior to starting work, and this protection shall be maintained intact until all work in the area is completed.

1.8 INFECTION PREVENTION MEASURES

A. Implement the requirements of VAMC’s Infection Control Risk Assessment (ICRA) team. ICRA Group may monitor dust in the vicinity of the construction work and require the Contractor to take corrective action immediately if the safe levels are exceeded.

B. Establish and maintain a dust control program as part of the contractor's infection preventive measures in accordance with the guidelines provided by ICRA Group as specified here. Prior to start of work, prepare a plan detailing project-specific dust protection measures, including periodic status reports, and submit to Project Engineer and Facility ICRA team for review for compliance with contract requirements in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.
   1. All personnel involved in the construction or renovation activity shall be educated and trained in infection prevention measures established by the medical center.

C. Medical center Infection Control personnel shall monitor for airborne disease (e.g. aspergillosis) as appropriate during construction. A baseline of conditions may be established by the medical center prior to the start of work and periodically during the construction stage to determine impact of construction activities on indoor air quality. In addition:
   1. The RE and VAMC Infection Control personnel shall review the requirement for negative air pressure in the construction zone shall depend on the location and type of activity. Upon notification, the contractor shall implement corrective measures to restore proper pressure differentials as needed.
   2. In case of any problem, the medical center, along with assistance from the contractor, shall conduct an environmental assessment to find and eliminate the source.

D. In general, following preventive measures shall be adopted during construction to keep down dust and prevent mold.
   1. Dampen debris to keep down dust and provide temporary construction partitions in existing structures where directed by Resident Engineer. Blank off ducts and diffusers to prevent circulation of dust into occupied areas during construction.
   2. Do not perform dust producing tasks within occupied areas without the approval of the Resident Engineer. For construction in any areas that will remain jointly occupied by the medical Center and Contractor's workers, the Contractor shall:
      a. Provide dust proof temporary drywall construction barriers to completely separate construction from the operational areas of the hospital in order to contain dirt debris and dust. Barriers shall be sealed and made presentable on hospital occupied side. Install a self-closing rated door in a metal frame, commensurate with the partition, to allow worker access. Maintain negative air at all times. A fire retardant polystyrene, 6-mil thick or

greater plastic barrier meeting local fire codes may be used where dust control is the only hazard, and an agreement is reached with the Resident Engineer and Medical Center.

b. HEPA filtration is required where the exhaust dust may reenter the breathing zone. Contractor shall verify that construction exhaust to exterior is not reintroduced to the medical center through intake vents, or building openings. Install HEPA (High Efficiency Particulate Accumulator) filter vacuum system rated at 95% capture of 0.3 microns including pollen, mold spores and dust particles. Insure continuous negative air pressures occurring within the work area. HEPA filters should have ASHRAE 85 or other prefilter to extend the useful life of the HEPA. Provide both primary and secondary filtrations units. Exhaust hoses shall be heavy duty, flexible steel reinforced and exhausted so that dust is not reintroduced to the medical center.

c. Adhesive Walk-off/Carpet Walk-off Mats, minimum 600mm x 900mm (24” x 36”), shall be used at all interior transitions from the construction area to occupied medical center area. These mats shall be changed as often as required to maintain clean work areas directly outside construction area at all times.

d. Vacuum and wet mop all transition areas from construction to the occupied medical center at the end of each workday. Vacuum shall utilize HEPA filtration. Maintain surrounding area frequently. Remove debris as they are created. Transport these outside the construction area in containers with tightly fitting lids.

e. The contractor shall not haul debris through patient-care areas without prior approval of the Resident Engineer and the Medical Center. When, approved, debris shall be hauled in enclosed dust proof containers or wrapped in plastic and sealed with duct tape. No sharp objects should be allowed to cut through the plastic. Wipe down the exterior of the containers with a damp rag to remove dust. All equipment, tools, material, etc. transported through occupied areas shall be made free from dust and moisture by vacuuming and wipe down.

f. Using a HEPA vacuum, clean inside the barrier and vacuum ceiling tile prior to replacement. Any ceiling access panels opened for investigation beyond sealed areas shall be sealed immediately when unattended.

g. There shall be no standing water during construction. This includes water in equipment drip pans and open containers within the construction areas. All accidental spills must be

cleaned up and dried within 12 hours. Remove and dispose of porous materials that remain damp for more than 72 hours.

h. At completion, remove construction barriers and ceiling protection carefully, outside of normal work hours. Vacuum and clean all surfaces free of dust after the removal.

E. Final Cleanup:

1. Upon completion of project, or as work progresses, remove all construction debris from above ceiling, vertical shafts and utility chases that have been part of the construction.
2. Perform HEPA vacuum cleaning of all surfaces in the construction area. This includes walls, ceilings, cabinets, furniture (built-in or free standing), partitions, flooring, etc.
3. All new air ducts shall be cleaned prior to final inspection.

1.9 DISPOSAL AND RETENTION

A. Materials and equipment accruing from work removed and from demolition of buildings or structures, or parts thereof, shall be disposed of as follows:

1. Reserved items which are to remain property of the Government are identified by attached tags or noted on drawings or in specifications as items to be stored. Items that remain property of the Government shall be removed or dislodged from present locations in such a manner as to prevent damage which would be detrimental to re-installation and reuse. Store such items where directed by Resident Engineer.
2. Items not reserved shall become property of the Contractor and be removed by Contractor from Medical Center.
3. Items of portable equipment and furnishings located in rooms and spaces in which work is to be done under this contract shall remain the property of the Government. When rooms and spaces are vacated by the Department of Veterans Affairs during the alteration period, such items which are NOT required by drawings and specifications to be either relocated or reused will be removed by the Government in advance of work to avoid interfering with Contractor's operation.

1.10 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES, AND IMPROVEMENTS

A. The Contractor shall preserve and protect all structures, equipment, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will

remain in place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workmen, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the Contracting Officer.

B. The Contractor shall protect from damage all existing improvements and utilities at or near the work site and on adjacent property of a third party, the locations of which are made known to or should be known by the Contractor. The Contractor shall repair any damage to those facilities, including those that are the property of a third party, resulting from failure to comply with the requirements of this contract or failure to exercise reasonable care in performing the work. If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

(FAR 52.236-9)

C. Refer to Articles 1.6, 1.7, and 1.11, "Alterations", "Restoration", and "Operations and Storage Areas" for additional instructions concerning repair of damage to structures and site improvements.

D. Refer to FAR clause 52.236-7, "Permits and Responsibilities," which is included in General Conditions. A National Pollutant Discharge Elimination System (NPDES) permit is required for this project. The Contractor is considered an "operator" under the permit and has extensive responsibility for compliance with permit requirements. VA will make the permit application available at the (appropriate medical center) office. The apparent low bidder, contractor and affected subcontractors shall furnish all information and certifications that are required to comply with the permit process and permit requirements. Many of the permit requirements will be satisfied by completing construction as shown and specified. Some requirements involve the Contractor's method of operations and operations planning and the Contractor is responsible for employing best management practices. The affected activities often include, but are not limited to the following:

1. Designating areas for equipment maintenance and repair;
2. Providing waste receptacles at convenient locations and provide regular collection of wastes;
3. Locating equipment wash down areas on site, and provide appropriate control of wash-waters;
4. Providing protected storage areas for chemicals, paints, solvents, fertilizers, and other potentially toxic materials; and
5. Providing adequately maintained sanitary facilities.

1.11 RESTORATION

A. Remove, cut, alter, replace, patch and repair existing work as necessary to install new work. Except as otherwise shown or specified, do not cut, alter or remove any structural work, and do not disturb any ducts, plumbing, steam, gas, or electric work without approval of the Resident Engineer. Existing work to be altered or extended and that is found to be defective in any way, shall be reported to the Resident Engineer before it is disturbed. Materials and workmanship used in restoring work, shall conform in type and quality to that of original existing construction, except as otherwise shown or specified.

B. Upon completion of contract, deliver work complete and undamaged. Existing work (walls, ceilings, partitions, floors, mechanical and electrical work, lawns, paving, roads, walks, etc.) disturbed or removed as a result of performing required new work, shall be patched, repaired, reinstalled, or replaced with new work, and refinished and left in as good condition as existed before commencing work.

C. At Contractor's own expense, Contractor shall immediately restore to service and repair any damage caused by Contractor's workmen to existing piping and conduits, wires, cables, etc., of utility services or of fire protection systems and communications systems (including telephone) which are indicated on drawings and which are not scheduled for discontinuance or abandonment.

D. Expense of repairs to such utilities and systems not shown on drawings or locations of which are unknown will be covered by adjustment to contract time and price in accordance with clause entitled "CHANGES" (FAR 52.243-4 and VAAR 852.236-88) and "DIFFERING SITE CONDITIONS" (FAR 52.236-2) of Section 00 72 00, GENERAL CONDITIONS.

1.12 PHYSICAL DATA (RESERVED)

1.13 PROFESSIONAL SURVEYING SERVICES (RESERVED)

1.14 LAYOUT OF WORK

A. The Contractor shall lay out the work from Government established base lines and bench marks, indicated on the drawings, and shall be responsible for all measurements in connection with the layout. The Contractor shall furnish, at Contractor's own expense, all stakes, templates, platforms, equipment, tools, materials, and labor required to lay out any part of the work. The Contractor shall be responsible for executing the work to the lines and grades that may be established or indicated by the Contracting Officer. The Contractor shall also be responsible for maintaining and preserving all stakes and other marks established by the Contracting Officer until authorized to remove them. If such marks are destroyed by the Contractor or through Contractor's negligence

before their removal is authorized, the Contracting Officer may replace them and deduct the expense of the replacement from any amounts due or to become due to the Contractor.

(FAR 52.236-17)

1.15 AS-BUILT DRAWINGS

A. The contractor shall maintain two full size sets of as-built drawings which will be kept current during construction of the project, to include all contract changes, modifications and clarifications.

B. All variations shall be shown in the same general detail as used in the contract drawings. To insure compliance, as-built drawings shall be made available for the Resident Engineer's review, as often as requested.

C. Contractor shall deliver two approved completed sets of as-built drawings to the Resident Engineer within 15 calendar days after each completed phase and after the acceptance of the project by the Resident Engineer.

D. Paragraphs A, B, & C shall also apply to all shop drawings.

1.16 USE OF ROADWAYS

A. For hauling, use only established public roads and roads on Medical Center property and, when authorized by the Resident Engineer, such temporary roads which are necessary in the performance of contract work. Temporary roads shall be constructed by the Contractor at Contractor's expense. When necessary to cross curbing, sidewalks, or similar construction, they must be protected by well-constructed bridges.

1.17 RESIDENT ENGINEER'S FIELD OFFICE (RESERVED)

1.18 TEMPORARY USE OF MECHANICAL AND ELECTRICAL EQUIPMENT

A. Use of new installed mechanical and electrical equipment to provide heat, ventilation, plumbing, light and power will be permitted subject to compliance with the following provisions:

1. Permission to use each unit or system must be given by Resident Engineer. If the equipment is not installed and maintained in accordance with the following provisions, the Resident Engineer will withdraw permission for use of the equipment.
2. Electrical installations used by the equipment shall be completed in accordance with the drawings and specifications to prevent damage to the equipment and the electrical systems, i.e. transformers, relays, circuit breakers, fuses, conductors, motor controllers and their overload elements shall be properly sized, coordinated and adjusted. Voltage supplied to each item of equipment shall be verified to be correct and it shall be determined that motors are not overloaded. The electrical equipment shall be thoroughly cleaned before using it and again

immediately before final inspection including vacuum cleaning and wiping clean interior and exterior surfaces.

3. Units shall be properly lubricated, balanced, and aligned. Vibrations must be eliminated.
4. Automatic temperature control systems for preheat coils shall function properly and all safety controls shall function to prevent coil freeze-up damage.
5. The air filtering system utilized shall be that which is designed for the system when complete, and all filter elements shall be replaced at completion of construction and prior to testing and balancing of system.
6. All components of chilled water production and distribution system and other auxiliary facilities used in temporary service shall be cleaned prior to use; maintained to prevent corrosion internally and externally during use; and cleaned, maintained and inspected prior to acceptance by the Government.

B. Prior to final inspection, the equipment or parts used which show wear and tear beyond normal, shall be replaced with identical replacements, at no additional cost to the Government.

C. This paragraph shall not reduce the requirements of the mechanical and electrical specifications sections.

1.19 TEMPORARY USE OF EXISTING ELEVATORS (RESERVED)

1.20 TEMPORARY USE OF NEW ELEVATORS (RESERVED)

1.21 TEMPORARY TOILETS (RESERVED)

1.22 AVAILABILITY AND USE OF UTILITY SERVICES

A. The Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. The Contractor shall carefully conserve any utilities furnished without charge.

B. Heat: Furnish temporary heat necessary to prevent injury to work and materials through dampness and cold. Use of open salamanders or any temporary heating devices which may be fire hazards or may smoke and damage finished work, will not be permitted. Maintain minimum temperatures as specified for various materials:

1. Obtain heat by connecting to Medical Center heating distribution system.
   a. Steam is available at no cost to Contractor.

C. Electricity (for Construction and Testing): Furnish all temporary electric services.

1. Obtain electricity by connecting to the Medical Center electrical distribution system. Electricity for all other uses is available at no cost to the Contractor.

D. Water (for Construction and Testing):

1. Obtain water by connecting to the Medical Center water distribution system. Provide reduced pressure backflow preventer at each connection. Water is available at no cost to the Contractor.
2. Maintain connections, pipe, fittings and fixtures and conserve water-use so none is wasted. Failure to stop leakage or other wastes will be cause for revocation (at Resident Engineer's discretion) of use of water from Medical Center's system.

E. Steam:

1. Obtain steam for testing by connecting to the Medical Center steam distribution system. Steam is available at no cost to the Contractor.
2. Maintain connections, pipe, fittings and fixtures and conserve steam-use so none is wasted. Failure to stop leakage or other waste will be cause for revocation (at Resident Engineer's discretion), of use of steam from the Medical Center's system.

1.23 NEW TELEPHONE EQUIPMENT (RESERVED)

1.24 TESTS (RESERVED)

1.25 INSTRUCTIONS (RESERVED)

1.26 GOVERNMENT-FURNISHED PROPERTY (RESERVED)

1.27 RELOCATED EQUIPMENT AND ITEM (RESERVED)

1.28 STORAGE SPACE FOR DEPARTMENT OF VETERANS AFFAIRS EQUIPMENT (RESEVED)

1.29 CONSTRUCTION SIGN (RESERVED)

1.30 SAFETY SIGN (RESERVED)

1.31 CONSTRUCTION DIGITAL IMAGES (RESERVED)

1.32 FINAL ELEVATION DIGITAL IMAGES (RESERVED)

1.33 HISTORIC PRESERVATION (RESERVED)

- - - E N D - - -

SECTION 010110
INFECTION CONTROL

DESCRIPTION

A.
This section specifies the control of environmental infection control and risk assessment that the Contractor must consider for construction & renovation projects in the medical facility. It includes Precautionary management of, Inspections and Non invasive activities, small scale, short duration activities, that creates minimal dust. Major demolition and construction projects that generate a moderate to high levels of dust. Movement of materials and equipment, and resources that are encountered or generated by the Contractor. The Contractor is obligated to consider the specified control measures with the costs included within the various contract items of work. An ***Infection Control Risk Assessment Matrix of Precautions*** for construction and renovation for activities follows.

TYPE A	**Inspection and Non-Invasive Activities**. Includes, but is not limited to: ▪ removal of ceiling tiles for visual inspection limited to 1 tile per 50 square feet ▪ painting (but not sanding) ▪ wall covering, electrical trim work, minor plumbing, and activities which do not generate dust or require cutting of walls or access to ceilings other than for visual inspection.
TYPE B	**Small scale, short duration activities which create minimal dust** Includes, but is not limited to: ▪ installation of telephone and computer cabling ▪ access to chase spaces ▪ cutting of walls or ceiling where dust migration can be controlled.
TYPE C	**Work that generates a moderate to high level of dust or requires demolition or removal of any fixed building components or assemblies** Includes, but is not limited to: ▪ sanding of walls for painting or wall covering ▪ removal of floor coverings, ceiling tiles and casework ▪ new wall construction ▪ minor duct work or electrical work above ceilings ▪ major cabling activities ▪ any activity that cannot be completed within a single work shift.
TYPE D	**Major demolition and construction projects** Includes, but is not limited to: ▪ activities which require consecutive work shifts ▪ requires heavy demolition or removal of a complete cabling system ▪ new construction.

B. Infection Control Risk and damage is defined as the presence of chemical, physical, or biological elements or agents which:

1. Adversely effect human health or welfare,
2. Unfavorably alter ecological balances of importance to human life,

Using the following table, ***identify the* Patient Risk Groups** that will be affected.
If more than one risk group will be affected, select the higher risk group:

Low Risk	Medium Risk	High Risk	Highest Risk
▪ Office areas	▪ Cardiology ▪ Echocardiography ▪ Endoscopy ▪ Nuclear Medicine ▪ Physical Therapy ▪ Radiology/MRI ▪ Respiratory Therapy	▪ CCU ▪ Emergency Room ▪ Labor & Delivery ▪ Laboratories (specimen) ▪ Newborn Nursery ▪ Outpatient Surgery ▪ Pediatrics ▪ Pharmacy ▪ Post Anesthesia Care Unit ▪ Surgical Units	▪ Any area caring for immunocompromised patients ▪ Burn Unit ▪ Cardiac Cath Lab ▪ Central Sterile Supply ▪ Intensive Care Units ▪ Medical Unit ▪ Negative pressure isolation rooms ▪ Oncology ▪ Operating rooms including C-section rooms

C. Match the ***Patient Risk Group*** *with* ***Construction Project Type*** on the following matrix to find the level of **infection control activities required**.
Patient Risk Group (***Low, Medium, High, Highest***) with the planned **…**
Construction Project Type (***A, B, C, D***) on the following matrix, to find the **…**
Class of Precautions (***I, II, III or IV***) or level of infection control activities required.

1) Infection Control approval will be required when the Construction Activity and Risk Level indicate that **Class III** or **Class IV** control procedures are necessary. Contact the VA Project engineer and the infection control officer before proceeding.

IC Matrix - Class of Precautions: Construction Project by Patient Risk

Patient Risk Group	Construction Project Type: TYPE A	TYPE B	TYPE C	TYPE D
LOW Risk Group	I	II	II	III/IV
MEDIUM Risk Group	I	II	III	IV
HIGH Risk Group	I	II	III/IV	IV
HIGHEST Risk Group	II	III/IV	III/IV	IV

D. Description of Required Infection Control Precautions by Class

	During Construction Project	Upon Completion of Project
CLASS I	1. Execute work by methods to minimize raising dust from construction operations. 2. Immediately replace a ceiling tile displaced for visual inspection	
CLASS II	1. Provide active means to prevent airborne dust from dispersing into atmosphere. 2. Water mist work surfaces to control dust while cutting. 3. Seal unused doors with duct tape. 4. Block off and seal air vents. 5. Place dust mat at entrance and exit of work area 6. *Remove or isolate HVAC system in areas where work is being performed.	1. Wipe work surfaces with disinfectant. 2. Contain construction waste before transport in tightly covered containers. 3. Wet mop and/or vacuum with HEPA filtered vacuum before leaving work area. 4. Remove isolation of HVAC system in areas where work is being performed.
CLASS III	1. *Remove or Isolate HVAC system in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Contain construction waste before transport in tightly covered containers. 5. Cover transport receptacles or carts. Tape covering unless solid lid. * Use window for negative HEPA air exhaust when accessible. Obtain V.A, resident engineer approval for exhausting in existing exhaust ductwork.	1. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and Infection Control Department and thoroughly cleaned by the owner's Environmental Services Department. 2. Remove barrier materials carefully to minimize spreading of dirt and debris associated with construction. 3. Vacuum work area with HEPA filtered vacuums. 4. Wet mop area with disinfectant. 5. Remove isolation of HVAC system in areas where work is being performed.

CLASS IV	1. Isolate HVAC system in area where work is being done to prevent contamination of duct system. 2. Complete all critical barriers i.e. sheetrock, plywood, plastic, to seal area from non-work area or implement control cube method (cart with plastic covering and sealed connection to work site with HEPA vacuum for vacuuming prior to exit) before construction begins. 3. Maintain negative air pressure within work site utilizing HEPA equipped air filtration units. 4. Seal holes, pipes, conduits, and punctures appropriately. 5. Construct anteroom and require all personnel to pass through this room so they can be vacuumed using a HEPA vacuum cleaner before leaving work site or they can wear cloth or paper coveralls that are removed each time they leave the work site. 6. All personnel entering work site are required to wear shoe covers. Shoe covers must be changed each time the worker exits the work area. 7. Do not remove barriers from work area until completed project is inspected by the owner's Safety Department and Infection Control Department and thoroughly cleaned by the owner's Environmental Services Department.	1. Remove barrier material carefully to minimize spreading of dirt and debris associated with construction. 2. Contain construction waste before transport in tightly covered containers. 3. Cover transport receptacles or carts. Tape covering unless solid lid 4. Vacuum work area with HEPA filtered vacuums. 5. Wet mop area with disinfectant. 6. Remove isolation of HVAC system in areas where work is being performed.

E. Identify the area surrounding the project area, assessing potential impact.

F.
Apply Life Safety and standards (APIC) and the following criteria would need to be assured in order to maintain the supply air side open during Class 4 construction activity:

- The air supply is 100% fresh air and the site and adjacent areas can be kept under negative pressure at all times.
- There is no re circulated air in this section
- There is no duct work involved in this section of the demolition
- The site can never be positive to the adjacent areas (i.e. keep the negative air machines on at all times or for 1-2 hours post site work until the negative action can be maintained.
- A log is maintained to document that the negative pressure is checked and has been maintained during those hours when the negative air machines are turned off. (An alarmed device is recommended for this purpose and should be maintained and monitored by the construction personnel).

PART 2 - PRODUCTS, MATERIALS AND EQUIPMENT

2.1 MATERIALS AND EQUIPMENT

GENERAL REQUIREMENTS

A. All materials shall be delivered in their original package, container or bundle bearing the name of the manufacturer and the brand name (where applicable). When transporting new materials & equipment though the hospital use 6 mil Poly sheeting encasing materials, tools and equipment or use a totally enclosed cart.

B. Store all materials subject to damage off the ground, away from wet or damp surfaces and under cover sufficient enough to prevent damage or contamination. Flammable materials cannot be stored inside buildings. Replacement materials shall be stored outside of the regulated/work area until construction is completed.

C. The Contractor shall not block or hinder use of buildings by patients, staff, and visitors to the VA in partially occupied buildings by placing materials/equipment in any unauthorized place.

D. The Competent Person shall inspect for damaged, deteriorating or previously used materials. Such materials shall not be used and shall be removed from the worksite and disposed of properly.

E. Demolition materials must be transported in totally enclosed containers.

1) Demolition on above ground floors may use a window debris chute to convey materials to an enclosed dumpster that provides dust and noise control. The contractor is responsible to maintain the original appearance of the building fascia.

2.1.2 NEGATIVE PRESSURE FILTRATION SYSTEM

A. The Contractor shall provide enough negative air machines to completely exchange the regulated area air volume 4 actual times per hour. The Competent Person shall determine the number of units needed for each regulated area by dividing the cubic feet in the regulated area by 15 and then dividing that result by the actual cubic feet per minute (cfm) for each unit to determine the number of units needed to effect 4 air changes per hour. Provide a standby unit in the event of machine failure and/or emergency in an adjacent area.

2.1.3 DESIGN AND LAYOUT

A. Before start of work submit the design and layout of the regulated area and the negative air machines, type of construction barriers to be used. The submittal shall indicate the number of, location of and size of negative air machines and exhaust route & location of the windows to be used. The point(s) of exhaust, airflow within the regulated area, anticipated negative pressure differential, and supporting calculations for sizing shall be provided. In addition, submit the following:
   1. Manufacturer's information on the negative air machine(s).
   2. Method of supplying power to the units and designation/location of the panels.
   3. Description of testing method(s) for correct air volume and pressure differential. Provide manufacturer's product data on the pressure differential measuring device used.
   4. If auxiliary power supply is to be provided for the negative air machines, provide a schematic diagram of the power supply and manufacturer's data on the generator and switch.
   5. Location of isolation negative air pressure monitor.

2.1.4 NEGATIVE AIR MACHINES

A. Negative Air Machine Cabinet: The cabinet shall be constructed of steel or other durable material capable of withstanding potential

damage from rough handling and transportation. The width of the cabinet shall be less than 30" in order to fit in standard doorways. The cabinet must be factory sealed to prevent dust from being released during use, transport, or maintenance. Any access to and replacement of filters shall be from the inlet end. The unit must be on casters or wheels.

B. Negative Air Machine Fan: The rating capacity of the fan must the air moving capacity under actual operating conditions. Manufacturer's typically use "free-air" (no resistance) conditions when rating fans. The fan must be a centrifugal type fan.

C. Negative Air Machine Final Filter:

1) When exhausting directly to the outside from a window or penetration the filter shall be a minimum MERV 8 pleated filter media completely sealed on all edges within a structurally rigid frame.

2) When exhausting to a exhaust duct: the final filter shall be a HEPA filter. The filter media must be completely sealed on all edges within a structurally rigid frame. The filter shall align with a continuous flexible gasket material in the negative air machine housing to form an air tight seal. Each **HEPA** filter shall be individually tested and certified by the manufacturer to have an efficiency of not less than 99.97% when challenged with 0.3 μm dioctylphthalate (DOP) particles. Testing shall have been done in accordance with Military Standard MIL- STD-282 and Army Instruction Manual 136-300-175A. Each filter must bear a UL586 label to indicate ability to perform under specified conditions. Each filter shall be marked with the name of the manufacturer, serial number, air flow rating, efficiency and resistance, and the direction of test air flow.

D. Negative Air Machine Pre-filters: The pre-filters, which protect the final HEPA filter by removing larger particles, are required to prolong the operating life of the HEPA filter. Two stages of pre-filtration are required. A first stage pre-filter shall be a low efficiency type for particles 10 μm or larger. A second stage pre-filter shall have a medium efficiency effective for particles down to 5 μm or larger. Pre-filters shall be installed either on

or in the intake grid of the unit and held in place with a special housing or clamps.

E. Negative Air Machine Safety and Warning Devices: An electrical/ mechanical lockout must be provide to prevent the fan from being operated without a HEPA filter. Units must be equipped with an automatic shutdown device to stop the fan in the event of a rupture in the HEPA filter or blockage in the discharge of the fan. Warning lights are required to indicate normal operation; too high a pressure drop across filters; or too low of a pressure drop across filters.

F. Negative Air Machine Electrical: All electrical components shall be approved by the National Electrical Manufacturer's Association (NEMA) and Underwriter's Laboratories (UL). Each unit must be provided with overload protection and the motor, fan, fan housing, and cabinet must be grounded.

2.1.5 PRESSURE DIFFERENTIAL

A. The fully operational negative air system within the regulated area shall continuously maintain a pressure differential of -0.02" water column. Before any disturbance of any material or building system, this shall be demonstrated to the VA by use of a pressure differential meter/manometer as required by OSHA 29 CFR 1926.1101(e)(5)(i). The Competent Person shall be responsible for providing and maintaining the negative pressure and air changes as required by OSHA and this specification.

2.1.6 TESTING THE SYSTEM

A. The negative pressure system must be tested before any disturbedance. After the regulated area has been completely prepared, the decontamination units set up, and the negative air machines installed, start the units up one at a time. Demonstrate and document the operation and testing of the negative pressure system to the VA using smoke tubes and a negative pressure gauge. Testing must also be done at the start of each work shift.

2.1.7 DEMONSTRATION OF THE NEGATIVE AIR PRESSURE SYSTEM

A. The demonstration of the operation of the negative pressure system to the VA shall include, but not be limited to, the following:

1. Contractor to install Triatek (Web site www.Ttk.com) negative air isolation monitoring stations at the sites access doors

or at opposite sides of the construction area check with resident engineer for # of units and location.

2. Curtains of the decontamination units move in toward regulated area.
3. Use smoke tubes to demonstrate air is moving air across all areas in which work is to be done.
4. Plastic barriers and sheeting move lightly in toward the regulated area.

2.1.8 USE OF SYSTEM DURING CONSTRUCTION OPERATIONS

A. Start units before beginning any disturbance occurs. After work begins, the units shall run continuously, maintaining 4 actual air changes per hour at a negative pressure differential of 5.0 Pa (-0.02") water column, for the duration of the work until a final visual clearance and final air clearance has been completed.

B. The negative air machines shall not be shut down for the duration of the project unless authorized by the VA, in writing.

C. Construction work shall begin at a location closest from the units and proceed away from them. If an electric failure occurs, the Competent Person shall stop all work and not resume until power is restored and all units necessary are operating properly again.

D. The negative air machines shall continue to run after all work is completed and until a final visual clearance and a final air, clearance has been completed for that regulated area.

2.2 CONTAINMENT BARRIERS AND COVERINGS IN THE REGULATED AREA

2.2.1 GENERAL

A. Seal off the perimeter to the regulated area to completely isolate the regulated area from adjacent spaces. All surfaces in the regulated area must be covered to prevent contamination and to facilitate clean-up. Should adjacent areas become contaminated, immediately stop work and clean up the contamination at no additional cost to the Government.

2.2.2 CONTROLLING ACCESS TO THE REGULATED AREA

A. Access to the regulated area is allowed only through the personnel decontamination facility (PDF). All other means of access shall be eliminated and OSHA warning signs posted as required by OSHA. If the regulated area is adjacent to or within

view of an occupied area, provide a visual barrier of opaque fire retardant poly sheeting at least 4 mils thick to prevent building occupant observation. If the adjacent area is accessible to the public, the barrier must be solid and capable of withstanding the negative pressure.

2.2.3 CRITICAL BARRIERS

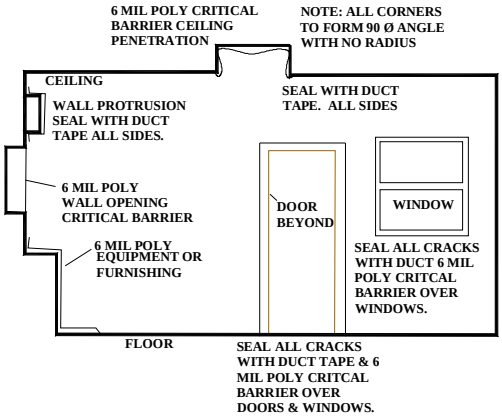
A. Completely separate the regulated area from adjacent areas using fire retardant poly at least 4 mils thick and duct tape. Individually seal with two layers of 6 mil poly and duct tape all HVAC openings, cap off exhaust into the regulated area. Individually seal all lighting fixtures, clocks, doors, windows, convectors, speakers, or any other objects in the regulated area. Use care with hot/warm surfaces see fig 1.

2.2.4 PRIMARY BARRIERS

A. Temporary Construction Partitions:

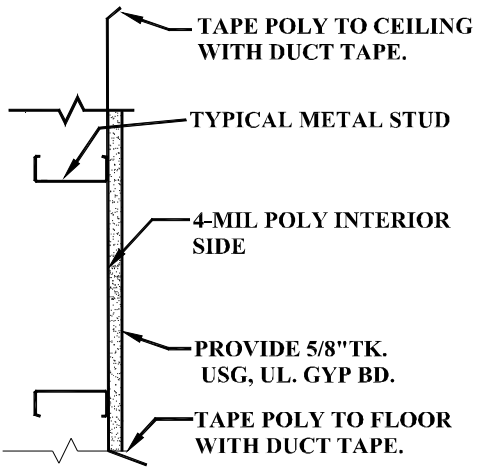
1. Install and maintain temporary construction partitions to provide separations between construction areas and adjoining areas. Construct partitions of gypsum board or treated plywood (flame spread rating of 25 or less in accordance with ASTM E84) on one side of wood or metal steel studs. Seal with one layers of 4 mil poly for a vapor barrier under gypsum or plywood. Extend the Poly through suspended ceilings to floor slab or roof. Seal penetrations at door openings, install tight-fitting VA supplied construction doors with self-closing devices see fig. 2 for barrier construction.

FIG. 1



CRITICAL BARRIER PREP INSTALLATION

NOT TO SCALE:



TEMPORARY IC BARRIER WALL CONSTRUCTION

Fig. 2

Section 01 11 00
Summary of the Work

PART 1 - General

1.1 The Work

A. The project includes all material, labor, tools, equipment, field engineering, and transportation necessary to complete all work as identified in the Drawings and further defined in these Specifications. This includes all items not specifically mentioned, but incidental to the work to provide a complete and operational product.

B. The Work includes:

Building 2

1. The work identified by keynote 1 for approximately 960 LF.
2. The work identified by keynote 2 in approximately 39 locations.
3. The work identified by keynote 3 for total of approximately 1370 LF.
4. The work identified by keynote 4 in approximately 960 LF of parapet.
5. The work identified by keynote 5 at approximately 39 locations.
6. The work identified by keynote 6 at approximately 4 locations.
7. The work identified by keynote 7 – N/A
8. The work identified by keynote 8 in approximately 3 locations for a total of approximately 665 SF.
9. The work identified by keynote 9 in approximately 10 locations for a total of approximately 1000 SF.
10. The work identified by keynote 10 in approximately 9 locations.
11. The work identified by keynotes 11 through 12 - N/A.
12. The work identified by keynote 13 in approximately 2 locations.
13. The work identified by keynote 14 in approximately 2 locations.
14. The work identified by keynote 15 - N/A.
15. The work identified by keynote 16 in approximately 2 locations with a total of 25 brick to be replaced.
16. The work identified by keynotes 17 through 19 - N/A.
17. The work identified by keynote 20 in approximately 7 locations.
18. The work identified by keynotes 21 through 24 - N/A.
19. The work identified by keynote 25 in approximately 3 locations with a total of 62 SF.
20. The work identified by keynote 26 in approximately 40 locations with a total of 260 SF.
21. The work identified by keynote 27 in approximately 8 locations with a total of 143 LF.
22. The work identified by keynote 28 in approximately 1 location.
23. The work identified by keynote 29 - N/A.
24. The work identified by keynote 30 in approximately 4 locations.
25. The work identified by keynotes 31 through 33 - N/A.
26. The work identified by keynote 34 for total of approximately 405 LF.
27. The work identified by keynotes 35 through 38 - N/A.
28. The work identified by keynote 39 - N/A.
29. The work identified by keynote 40 for total of approximately 187 LF.
30. The work identified by keynote 41 in approximately 7 locations with a total of 255 LF.
31. The work identified by keynote 42 in approximately 1 location with a total of 40 LF.

32. The work identified by keynote 43 in approximately 1 location with a total of 14 LF.
33. The work identified by keynote 44 in approximately 1 location.
34. The work identified by keynote 45 in approximately 1 location with a total of 5 LF.
35. The work identified by keynote 46 in approximately 1 location with a total of 15 LF.
36. Work denoted by keynote 47. See window schedule A202 and Detail 1/A202.
37. The work identified by keynote 48 in approximately 22 locations.
38. The work identified by keynote 49 – N/A.
39. The work identified by keynote 50 in approximately 2 locations.
40. General masonry cleaning and inspection per specifications and General Note 2 at approximately 18,145 gross square feet of wall. (Gross square footage includes walls, doors, louvers, etc. Approximately 80% of wall surface is masonry.)
41. The quantities indicated above are from the Architects estimates and are for information only. The Contractor is responsible for determining required quantities from the drawings and specifications

Building 3

1. The work identified by keynote 1 for approximately 290 LF.
2. The work identified by keynote 2 in approximately 18 locations and 74 LF.
3. The work identified by keynote 3 in approximately 22 locations for a total of approximately 429 LF.
4. The work identified by keynote 4 in approximately 300 LF of parapet.
5. The work identified by keynote 5 at approximately 18 windows.
6. The work identified by keynote 6 at approximately 2 locations.
7. The work identified by keynote 7 for a total of approximately 7 LF.
8. N/A
9. The work identified by keynote 9 at approximately 8 locations for a total of approximately 60 SF.
10. The work identified by keynote 10 at approximately 1 location.
11. The work identified by keynote 11 at approximately 1 location.
12. The work identified by keynote 12 at approximately 1 entrance.
13. Work denoted by keynotes 13 through 25. N/A
14. The work identified by keynote 26 at approximately 2 locations and approximately 17 SF.
15. Work denoted by keynotes 27 through 47. N/A
16. The work identified by keynote 48 in approximately 18 locations.
17. The work identified by keynotes 49 through 50 – N/A.
18. General masonry cleaning and inspection per specifications and General
19. General masonry cleaning and inspection per specifications and General Note 2 at approximately 3650 gross square feet of wall. (Gross square footage includes walls, doors, louvers, etc. Approximately 86% of wall surface is masonry.)
20. The quantities indicated above are from the Architects estimates and are for information only. The Contractor is responsible for determining required quantities from the drawings and specifications

Building 4

1. The work identified by keynote 1 for approximately 206 LF.

2. The work identified by keynote 2 in approximately 23 locations and 103 LF. Windows in vinyl sided areas not included unless noted otherwise.
3. The work identified by keynote 3 in approximately 25 locations for a total of approximately 485 LF.
4. The work identified by keynote 4 in approximately 206 LF parapet.
5. The work identified by keynote 5 at approximately 22 windows.
6. The work identified by keynote 6 – keynote 8 – N/A
7. The work identified by keynote 9 at approximately 11 LF for a total of approximately 42 SF.
8. Work denoted by keynote 10 - N/A
9. The work identified by keynote 11 at approximately 1 entrance.
10. The work identified by keynotes 12 – 14 – N/A
11. The work identified by keynote 15 at approximately 4 locations for a total of approximately 40 LF.
12. The work identified by keynote 16 – N/A.
13. Work denoted by keynotes 17 for a total of approximately 235 LF. Includes foundation on vinyl sided addition.
14. The work identified by keynote 18 at approximately 1 location for a total of approximately 11 LF.
15. Work denoted by keynote 19 at approximately 1 entrance for a total of approximately 17 LF.
16. Work denoted by keynote 20 w/ approximately 5 anchors in one noted location.
17. Work denoted by keynote 21 at approximately 1 location for a total of approximately 3 LF.
18. Work denoted by keynote 22 at approximately 8 locations.
19. Work denoted by keynote 23 at approximately 1 location.
20. Work denoted by keynotes 24 through 25. N/A
21. Work denoted by keynote 26 at approximately 2 locations for a total of approximately 8 SF and 2 cracked brick.
22. Work denoted by keynotes 27 through 47. N/A
23. The work identified by keynote 48 in approximately 31 locations.
24. The work identified by keynotes 49 in one location for a total of approximately 4 LF.
25. The work identified by keynote 50 – N/A.
26. The work identified by keynote 51 at approximately 1 chimney.
27. General masonry cleaning and inspection per specifications and General Note 2 at approximately 4205 gross square feet of wall. (Gross square footage includes walls, doors, louvers, etc. Approximately 76% of wall surface is masonry.)
28. The quantities indicated above are from the Architects estimates and are for information only. The Contractor is responsible for determining required quantities from the drawings and specifications.

Building 5

1. The work identified by keynote 1 for approximately 295 LF.
2. The work identified by keynote 2 in approximately 35 locations and 135 LF.
3. The work identified by keynote 3 in approximately 47 locations for a total of approximately 865 LF.
4. The work identified by keynote 4 in approximately 295 LF parapet.
5. The work identified by keynote 5 at approximately 35 windows.
6. The work identified by keynote 6 in approximately 1 location with a total of approximately 1 spalled brick.

7. The work identified by keynotes 7 through 8 – N/A
8. Work denoted by keynote 9 at approximately 8 locations and a total of 28 SF.
9. The work identified by keynotes 10 through 16 – N/A
10. The work identified by keynote 17 with approximately 260 LF.
11. The work identified by keynote 18 – N/A
12. The work identified by keynote 19 at approximately 4 entrances with approximately 40LF.
13. The work identified by keynotes 20 through 21 – N/A
14. The work identified by keynote 22 at approximately 14 locations.
15. The work identified by keynotes 23 through 24 – N/A
16. The work identified by keynote 25 at approximately 9 locations with approximately 65 SF.
17. The work identified by keynote 26 at approximately 9 locations with
18. approximately 21 cracked brick.
19. The work identified by keynotes 27 through 28 – N/A
20. The work identified by key note 29 with approximately 90 LF of cracked mortar and 6 cracked brick.
21. The work identified by keynote 30 at approximately 3 location.
22. The work identified by keynote 31 at approximately 2 locations with
23. approximately 10 LF.
24. The work identified by keynote 32 at approximately 2 locations.
25. The work identified by keynote 33 at approximately 3 locations.
26. The work identified by keynote 34 – N/A
27. The work identified by keynote 35 at approximately 1 window.
28. The work identified by keynote 36 at approximately 1 location and approximately 1 SF.
29. The work identified by keynote 37 at approximately 1 location and approximately 18 SF.
30. Work denoted by keynotes 38 through 47. N/A
31. The work identified by keynotes 48 in approximately 50 locations.
32. The work identified by keynote 49 through 50 – N/A.
33. General masonry cleaning and inspection per specifications and General Note 2 at approximately 5550 gross square feet of wall. (Gross square footage includes walls, doors, louvers, etc. Approximately 79% of wall surface is masonry.)
34. The quantities indicated above are from the Architects estimates and are for information only. The Contractor is responsible for determining required quantities from the drawings and specifications.

Building 6

1. The work identified by keynote 1 for approximately 267 LF.
2. The work identified by keynote 2 in approximately 36 locations and 209 LF.
3. The work identified by keynote 3 in approximately 42 locations for a total of approximately 897 LF.
4. The work identified by keynote 4 in approximately 267 LF parapet.
5. The work identified by keynote 5 at approximately 36 windows.
6. The work identified by keynote 6 in approximately 1 location with a total of approximately 1 spalled brick.
7. The work identified by keynotes 7 through 8 – N/A
8. The work identified by keynote 9 in approximately 19 locations with a total of approximately 170 SF.
9. The work identified by keynotes 10 through 14 – N/A.

10. The work identified by keynote 15 in approximately 1 location with a total of 4 SF.
11. The work identified by keynote 16 – N/A.
12. The work identified by keynote 17 with a total of approximately 298 LF.
13. The work identified by keynote 18 – N/A.
14. The work identified by keynote 19 in approximately 3 locations with a total of approximately 25 LF.
15. The work identified by keynote 20 – N/A.
16. The work identified by keynote 21 in approximately 1 location.
17. The work identified by keynote 22 in approximately 23 locations.
18. The work identified by keynotes 23 through 24 – N/A.
19. The work identified by keynote 25 in approximately 5 locations with a total of approximately 40 SF.
20. The work identified by keynote 26 in approximately 2 location with a total of approximately 2 cracked brick.
21. The work identified by keynotes 27 through 29 – N/A.
22. The work identified by keynote 30 in approximately 6 locations.
23. The work identified by keynotes 31 through 33 – N/A.
24. The work identified by keynotes 34 in approximately 12 locations with a total of approximately 190 LF.
25. The work identified by keynotes 35 through 37 – N/A.
26. The work identified by keynote 38 in approximately 1 location with a total of approximately 3 SF.
27. The work identified by keynotes 39 through 45 – N/A.
28. The work identified by keynote 46 with approximately 45 SF of parapet.
29. The work identified by keynote 47 – N/A.
30. The work identified by keynotes 48 in approximately 59 locations.
31. The work identified by keynote 49 through 50 – N/A.
32. The work identified by keynote 51 at approximately 1 chimney.
33. General masonry cleaning and inspection per specifications and General Note 2 at approximately 6370 gross square feet of wall. (Gross square footage includes walls, doors, louvers, etc. Approximately 75% of wall surface is masonry.)
34. The quantities indicated above are from the Architects estimates and are for information only. The Contractor is responsible for determining required quantities from the drawings and specifications.

Building 8

1. The work identified by keynotes 1 through 2 – N/A.
2. The work identified by keynote 3 in approximately 4 locations and 53 LF.
3. The work identified by keynotes 4 through 8 – N/A.
4. The work identified by keynote 9 in approximately 5 locations and with a total of 8 SF.
5. The work identified by keynotes 10 through 12 – N/A.
6. The work identified by keynote 13 on approximately 3 sides of the building for a total of approximatety 680 SF.
7. The work identified by keynote 14 on all sides of the building with a total of about 800 SF.
8. The work identified by keynotes 15 through 37 – N/A.
9. The work identified by keynote 38 on approximately 4 locations with approximately 92 LF.
10. The work identified by keynote 39 on approximately 2 locations.
11. The work identified by keynotes 40 through 50 – N/A.

12. General masonry cleaning and inspection per specifications and General Note 2 at approximately 1216 gross square feet of wall. (Gross square footage includes walls, doors, louvers, etc. Approximately 65% of wall surface is masonry.)
13. The quantities indicated above are from the Architects estimates and are for information only. The Contractor is responsible for determining required quantities from the drawings and specifications.

C. The Owner may contract for other work concurrent with this contract.

1.2 Owner Occupancy

A. The Owner will occupy the premises during the entire period of construction. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.

End of Section

SECTION 01 33 23
SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

1-1. Refer to Articles titled SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION (FAR 52.236-21) and, SPECIAL NOTES (VAAR 852.236-91), in GENERAL CONDITIONS.

1-2. For the purposes of this contract, samples, test reports, certificates, and manufacturers' literature and data shall also be subject to the previously referenced requirements. The following text refers to all items collectively as SUBMITTALS.

1-3. Submit for approval, all of the items specifically mentioned under the separate sections of the specification, with information sufficient to evidence full compliance with contract requirements. Materials, fabricated articles and the like to be installed in permanent work shall equal those of approved submittals. After an item has been approved, no change in brand or make will be permitted unless:

A. Satisfactory written evidence is presented to, and approved by Contracting Officer, that manufacturer cannot make scheduled delivery of approved item or;

B. Item delivered has been rejected and substitution of a suitable item is an urgent necessity or;

C. Other conditions become apparent which indicates approval of such substitute item to be in best interest of the Government.

1-4. Forward submittals in sufficient time to permit proper consideration and approval action by Government. Time submission to assure adequate lead time for procurement of contract - required items. Delays attributable to untimely and rejected submittals will not serve as a basis for extending contract time for completion.

1-5. Submittals will be reviewed for compliance with contract requirements by Architect-Engineer, and action thereon will be taken by Resident Engineer on behalf of the Contracting Officer.

1-6. Upon receipt of submittals, Architect-Engineer will assign a file number thereto. Contractor, in any subsequent correspondence, shall refer to this file and identification number to expedite replies relative to previously approved or disapproved submittals.

1-7. The Government reserves the right to require additional submittals, whether or not particularly mentioned in this contract. If additional submittals beyond those required by the contract are furnished pursuant to request therefor by Contracting Officer, adjustment in contract price and time will be made in accordance with Articles titled CHANGES (FAR

52.243-4) and CHANGES - SUPPLEMENT (VAAR 852.236-88) of the GENERAL CONDITIONS.

1-8. Schedules called for in specifications and shown on shop drawings shall be submitted for use and information of Department of Veterans Affairs and Architect-Engineer. However, the Contractor shall assume responsibility for coordinating and verifying schedules. The Contracting Officer and Architect- Engineer assumes no responsibility for checking schedules or layout drawings for exact sizes, exact numbers and detailed positioning of items.

1-9. Submittals must be submitted by Contractor only and shipped prepaid. Contracting Officer assumes no responsibility for checking quantities or exact numbers included in such submittals.

A. Submit samples in single units unless otherwise specified. Submit shop drawings, schedules, manufacturers' literature and data, and certificates in quadruplicate, except where a greater number is specified.

B. Submittals will receive consideration only when covered by a transmittal letter signed by Contractor. Letter shall contain the list of items, name of Medical Center, name of Contractor, contract number, applicable specification paragraph numbers, applicable drawing numbers (and other information required for exact identification of location for each item), manufacturer and brand, ASTM or Federal Specification Number (if any) and such additional information as may be required by specifications for particular item being furnished. In addition, catalogs shall be marked to indicate specific items submitted for approval.

1. A copy of letter must be enclosed with items, and any items received without identification letter will be considered "unclaimed goods" and held for a limited time only.
2. Each sample, certificate, manufacturers' literature and data shall be labeled to indicate the name and location of the Medical Center, name of Contractor, manufacturer, brand, contract number and ASTM or Federal Specification Number as applicable and location(s) on project.
3. Required certificates shall be signed by an authorized representative of manufacturer or supplier of material, and by Contractor.

C. If submittal samples have been disapproved, resubmit new samples as soon as possible after notification of disapproval. Such new samples shall be

marked "Resubmitted Sample" in addition to containing other previously specified information required on label and in transmittal letter.

D. Approved samples will be kept on file by the Resident Engineer at the site until completion of contract, at which time such samples will be delivered to Contractor as Contractor's property. Where noted in technical sections of specifications, approved samples in good condition may be used in their proper locations in contract work. At completion of contract, samples that are not approved will be returned to Contractor only upon request and at Contractor's expense. Such request should be made prior to completion of the contract. Disapproved samples that are not requested for return by Contractor will be discarded after completion of contract.

E. Submittal drawings (shop, erection or setting drawings) and schedules, required for work of various trades, shall be checked before submission by technically qualified employees of Contractor for accuracy, completeness and compliance with contract requirements. These drawings and schedules shall be stamped and signed by Contractor certifying to such check.

1. For each drawing required, submit one legible photographic paper or vellum reproducible.
2. Reproducible shall be full size.
3. Each drawing shall have marked thereon, proper descriptive title, including Medical Center location, project number, manufacturer's number, reference to contract drawing number, detail Section Number, and Specification Section Number.
4. A space 120 mm by 125 mm (4-3/4 by 5 inches) shall be reserved on each drawing to accommodate approval or disapproval stamp.
5. Submit drawings, ROLLED WITHIN A MAILING TUBE, fully protected for shipment.
6. One reproducible print of approved or disapproved shop drawings will be forwarded to Contractor.
7. When work is directly related and involves more than one trade, shop drawings shall be submitted to Architect-Engineer under one cover.

1-10. Samples, shop drawings, test reports, certificates and manufacturers' literature and data, shall be submitted for approval to

Northern Design Works

(Architect-Engineer)

420 Rail Street

(A/E P.O. Address)

Negaunee, MI 49866

(City, State and Zip Code)

1-11. At the time of transmittal to the Architect-Engineer, the Contractor shall also send a copy of the complete submittal directly to the Resident Engineer.

- - - E N D - - -

SECTION 02 41 00
DEMOLITION

PART 1 - GENERAL

1.1 DESCRIPTION:

This section specifies minor demolition as indicated on the drawings.

1.2 RELATED WORK:

A. Safety Requirements: GENERAL CONDITIONS Article, ACCIDENT PREVENTION.

B. Reserved items that are to remain the property of the Government: Section 01 00 00, GENERAL REQUIREMENTS.

C. Infectious Control: Section 01 01 10, INFECTION CONTROL.

1.3 PROTECTION:

A. Perform demolition in such manner as to eliminate hazards to persons and property; to minimize interference with use of adjacent areas, utilities and structures or interruption of use of such utilities; and to provide free passage to and from such adjacent areas of structures. Comply with requirements of GENERAL CONDITIONS Article, ACCIDENT PREVENTION.

B. Provide safeguards, including warning signs, barricades, temporary fences, warning lights, and other similar items that are required for protection of all personnel during demolition and removal operations. Comply with requirements of Section 01 00 00, GENERAL REQUIREMENTS, Article 1.9 PROTECTION OF EXISTING VEGETATION, STRUCTURES, EQUIPMENT, UTILITIES AND IMPROVEMENTS.

C. Maintain fences, barricades, lights, and other similar items around exposed excavations until such excavations have been completely filled.

D. Provide enclosed dust chutes with control gates from each floor to carry debris to truck beds and govern flow of material into truck. Provide overhead bridges of tight board or prefabricated metal construction at dust chutes to protect persons and property from falling debris.

E. Prevent spread of flying particles and dust. Sprinkle rubbish and debris with water to keep dust to a minimum. Do not use water if it results in hazardous or objectionable condition such as, but not limited to; ice, flooding, or pollution. Vacuum and dust the work area daily.

F. Before beginning any demolition work, the Contractor shall survey the site and examine the drawings and specifications to determine the extent of the work. The contractor shall take necessary precautions to

avoid damages to existing items to remain in place, to be reused, or to remain the property of the Medical Center; any damaged items shall be repaired or replaced as approved by the Resident Engineer. The Contractor shall coordinate the work of this section with all other work and shall construct and maintain shoring, bracing, and supports as required. The Contractor shall ensure that structural elements are not overloaded and shall be responsible for increasing structural supports or adding new supports as may be required as a result of any cutting, removal, or demolition work performed under this contract. Do not overload structural elements. Provide new supports and reinforcement for existing construction weakened by demolition or removal works. Repairs, reinforcement, or structural replacement must have Resident Engineer’s approval.

G. The work shall comply with the requirements of Section 01 01 10, INFECTION CONTROL.

PART 2 - PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 DEMOLITION:

A. Debris, including brick, concrete, stone, metals and similar materials shall become property of Contractor and shall be disposed of by him daily, off the Medical Center property to avoid accumulation at the demolition site. Materials that cannot be removed daily shall be stored in areas specified by the Resident Engineer. Break up concrete slabs below grade that do not require removal from present location into pieces not exceeding 600 mm (24 inches) square to permit drainage. Contractor shall dispose debris in compliance with applicable federal, state or local permits, rules and/or regulations.

B. Remove existing utilities as indicated or uncovered by work and terminate in a manner conforming to the nationally recognized code covering the specific utility and approved by the Resident Engineer. When Utility lines are encountered that are not indicated on the drawings, the Resident Engineer shall be notified prior to further work in that area.

3.2 CLEAN-UP:

On completion of work of this section and after removal of all debris, leave site in clean condition satisfactory to Resident Engineer. Clean-up shall include off the Medical Center Property disposal of all

items and materials not required to remain property of the Government as well as all debris and rubbish resulting from demolition operations.

- - - E N D - - -

Section 04 01 20
Masonry Cleaning and Restoration

PART 1 - General

1.1 Summary
- A. Section includes:
  1. Cleaning to include:
     a. Removal of atmospheric soiling from masonry.
     b. Removal of organic staining from masonry.
     c. Removal of metallic stains (copper and iron).
     d. Removal of paints, bitumens, and tars.
     e. Complete surface cleaning on completion of the work to remove any mortar staining, dust, and animal matter.
  2. Replacing damaged bricks.
  3. Patching damaged limestone.
  4. Removal of abandoned anchors, fittings, etc.
  5. Anchoring damaged brick veneer.
  6. Raking out and pointing of joints in existing masonry.
  7. Pointing of joints in repaired masonry.
- B. Related Sections:
  1. Section 040513: Masonry Mortaring.
  2. Section 042000: Unit Masonry – Replacement bricks and accessories.

1.2 References
- A. MSJC (Masonry Standards Joint Committee) Code - ACI (American Concrete Institute) 530/ASCE (American Society of Civil Engineers) 5/TMS (The Masonry Society) 402 - Building Code Requirements for Masonry Structures.
- B. MSJC (Masonry Standards Joint Committee) Specification - ACI (American Concrete Institute) 530.1/ASCE (American Society of Civil Engineers) 6/TMS (The Masonry Society) 602 - Specifications for Masonry Structures.

1.3 Submittals
- A. Temporary Protection: Submit plans for temporary protection of entrances, sidewalks, and adjacent construction and obtain approval from the Resident Engineer before performing work.
- B. Product Data: Submit data on cleaning products.
- C. Material Safety Data Sheets: Submit MSDS for each product used.

1.4 Quality Assurance
- A. Qualifications
  1. Provide competent trade foreman, well skilled and experienced in the specialized type of work required, for continuous supervision.
  2. Provide demonstrated, specialized, skilled and competent trades persons who shall have considerable experience in this type of work. The skills of individuals will be subject to review and acceptance by the Resident Engineer. Review will include production of mock-ups.
- B. Mock-ups
  1. Prepare mock-ups in locations determined with the Resident Engineer to represent each type of work required in this section.
  2. Samples shall be repeated until satisfactory results are obtained to the satisfaction of the Resident Engineer. The remainder of the work shall not begin until mock-ups are approved.

3. Approved mock-ups shall form the standard for the method and quality of work to be performed throughout the project.

1.5 Environmental Requirements
- A. Hot and Cold Weather Requirements: MSJC Specification.
- B. Any heater burning fossil fuels shall have its exhaust vented to the outside of the enclosure.
- C. Masonry cleaning shall not be performed when winds are sufficiently strong to spread cleaning materials or rinsed cleaning materials to adjacent unprotected areas.
- D. Comply with all applicable regulations related to the transportation, use, and disposal of all cleaning materials.

PART 2 - Products

2.1 Materials
- A. Water:
  1. Clean and free of contaminants.
  2. Where water has high iron or other metal content, pre-treat with complexing agents before use to reduce risk of staining.
- B. Surfactant: Non-ionic detergent intended for use on masonry.
- C. Biocide: Proprietary biocide, quaternary ammonia or tin based.
- D. Citrus Solvent: Proprietary citrus based solution for removal of petroleum based products.
- E. Paint Remover: Proprietary paint stripper intended for use on masonry.
- F. Limestone Repair Mortar: Mineral based, single component repair mortar, colored to match existing stone. U.S. Heritage Group, Heritage Restoration Mortar, 15HL, or equal.

2.2 Components
- A. Brick Veneer Repair Anchors: Stainless steel rod with brass expansion shields at each end.
  1. H&B model 521RA – B.
  2. Dur-O_Wal by Dayton Superior model DA5100.
  3. Construction Tie Products, Inc. model 5100 series Torque-Tie.
  4. Approved equal.

PART 3 - Execution

3.1 Preparation
- A. Seal and protect all openings, doors, windows, and adjacent areas to prevent damage and the spread of construction dust, water, or other materials into the building or onto adjacent sidewalks.
- B. All sills and projecting courses are to be covered with rigid protection, secured into joints, for the duration of cutting or pointing work above.
- C. Protect the general public and adjacent property from falling debris and overspray of cleaning materials by erecting properly constructed temporary protection. Submit plan for protection for approval.
- D. No part of scaffolding, hoists, or rigging shall bear directly on masonry. Provide isolating material of wood with additional padding as necessary to prevent damage to existing masonry.

3.2 Mortar Removal for Re-pointing
- A. Mortar is defective when:
  1. It is cracked.

2. It is spalled, chalking, dusting, or otherwise crumbling and excessively weathered back.

B. Cut out existing mortar joints (both bed and head joints) and remove by means of a toothing chisel or a special pointer's grinder, to a uniform depth of ¾ inch, or until sound mortar is reached.

C. Care shall be taken to not damage edges of existing masonry to remain. Contractor shall be responsible for replacement of damaged brick.

D. Remove dust and debris from the joints by brushing, blowing with air, or rinsing with water. Do not rinse when temperature is below freezing.

E. If masonry unseats or bond is broken, remove unit and reset.

3.3 Pointing of Joints

A. Immediately prior to application of mortar, dampen joints to be tuck pointed. Prior to application of pointing mortar, allow masonry units to absorb surface water.

B. Tightly pack mortar into joints in thin layers, approximately ¼" thick.

C. Allow layer to become 'thumbprint hard' before applying next layer.

D. Pack final layer flush with surfaces of masonry units. When mortar becomes 'thumbprint hard', tool joints.

3.4 Tooling of Joints

A. Tool joints with a jointing tool to produce a smooth, compacted, concave joint.

B. Tool joints in patch work with a jointing tool to match the existing surrounding joints.

3.5 Replacement of damaged or deteriorated brick

A. Brick is damaged when:
   1. It is cracked, chipped, or spalled.
   2. The outer face of the brick is hollow, detached, or missing.
   3. Previous cutting of the wall has removed a portion of the brick.

B. Cut out mortar joints surrounding masonry units that are to be removed and replaced.
   1. Units removed may be broken and removed, providing surrounding units to remain are not damaged.

C. After removing units, carefully chisel out remaining mortar and remove dust and debris.

D. Where units to be removed are part of veneer construction, exercise care to prevent debris from falling into the wall cavity.

E. Dampen surfaces of the surrounding units before new units are placed. Allow existing masonry to absorb surface moisture prior to starting installation of replacement units.

F. Butter contact surfaces of existing masonry and new replacement units with mortar.

G. Center replacement masonry units in opening and press into position.

H. Remove excess mortar with a trowel.

I. Point around replacement masonry units to ensure full head and bed joints.

J. When mortar becomes 'thumbprint hard', tool joints.

K. Where replacing in excess of four bricks in one area, install masonry ties to bond facing with back up wythes of masonry.
   1. Ties should be randomly installed except in areas sufficiently large for ties to be set every 24" horizontally and 16" vertically.
   2. Fasten ties solidly to back up whythe.

3.6 Patching of Damaged Limestone

A. Remove previous patching materials, sealants, etc. from damaged areas. Remove damaged stone down to sound material.

B. If depth of repair will exceed four inches, provide stainless steel screws and wire to reinforce repair.
C. Immediately prior to application of repair mortar, dampen stone. Prior to application of repair mortar, allow masonry units to absorb surface water.
D. Install skim coat of repair mortar in accordance with manufacturer's directions.
E. Install build coats of repair mortar in accordance with manufacturer's directions to match original surface of stone. Tool final surface to match original stone finish.

3.7 Removal of Surplus Equipment and Metal Fixtures
A. Remove all metal fixtures, brackets, wires, bolts, nails, screws, and shields that are no longer in use from masonry.
B. Remove any anchors or plugs by coring to ensure their complete removal.
C. Repoint where removed from mortar joints.
D. Replace bricks where removal creates a damaged brick.

3.8 Installation of Brick Veneer Repair Anchors
A. Install anchors at locations indicated on drawings according to manufacturer's installation directions.
B. Conceal anchor with mortar to match adjacent mortar joints.

3.9 Cleaning of Masonry
A. Preparation: Provide protection as required and described herein and obtain approval of Resident Engineer.
B. Testing:
1. Carry out test panels for each technique to determine optimum procedures for each substrate and level of soiling.
2. Location of test panels to be selected by Resident Engineer.
3. Obtain approval of test panels before proceeding with remainder of work.
C. Cleaning of Bird Droppings and Staining
1. The removal of all bird soiling is to be carried out wherever present on the building.
2. Using scrapers, remove as much of the soiling as possible.
3. Low pressure, maximum 400 PSI surfactant cleaning shall be employed to remove all stains. Supplement water washing with bristle brushing where sound substrate exists.
4. Carefully scrape residue into plastic bags, seal, and remove from site. Dispose of waste in accordance with applicable regulations.
D. Removal of Organic Growth
1. Remove organic growth where present.
2. Apply proprietary solution of quaternary ammonium-based biocide in accordance with manufacturer's directions, by hand held spray unit.
3. Flood solution over area to be treated and allow to penetrate masonry.
4. Contain solution in area of cleaning. Collect any run off and dispose of in accordance with applicable regulations.
5. After organic growth is killed, dry brush to remove surface residues.
E. Removal of Metallic Stains
1. Carry out cleaning employing poultices to remove stains.
2. Prepare poultice medium mixed with clean water or solvents and chemicals as appropriate to the nature of soiling.
3. Mix to consistency of a stiff cream.
4. Pre wet soiled areas with liquid portion of poultice.
5. Trowel apply poultice approximately ½" thick over soiled area and leave finished neatly.

6. Apply cover of polyethylene film or sheet and tape edges to control rate of drying.
7. Remove plastic after 24 hours.
8. Allow poultice to dry.
9. Carefully scrape residue into plastic bags, seal, and remove from site. Dispose of waste in accordance with applicable regulations.
10. Reapply poultice and repeat process as necessary.

F. Removal of Bitumens, Tars, and Other Petroleum Based Stains
1. Apply citrus based solvent per manufacturer's directions.
2. Rinse with low pressure, maximum 400 PSI, water to remove all stains.
3. Contain solution in area of cleaning. Collect any run off and dispose of in accordance with applicable regulations.

G. Removal of Paint
1. Apply paint remover to isolated areas of paint on masonry in accordance to manufacturer's directions.
2. Rinse with low pressure, maximum 400 PSI, water to remove all stains.
3. Contain solution in area of cleaning. Collect any run off and dispose of in accordance with applicable regulations.

H. Complete Surface Cleaning of Building
1. Remove mortar droppings and other debris from pointing and masonry replacement work.
2. Pre-wet portion of the building to be cleaned with clean water.
3. Apply a 5% solution by weight of surfactant at low pressure, maximum 400 PSI, using a 15 to 25 degree fan type nozzle.
4. Supplement water washing with non-metallic bristle brushing at heavily soiled areas.
5. Do not allow the surface to dry.
6. Thoroughly rinse all traces of cleaning solution from the masonry.
7. Use of muriatic acid for cleaning is prohibited.

End of Section

SECTION 04 05 13
MASONRY MORTARING

PART 1 - GENERAL

1.1 DESCRIPTION:

Section specifies mortar materials and mixes.

1.2 RELATED WORK:

A. Mortar used in Section:

1. Section 04 01 20, MASONRY CLEANING AND RESTORATION.
3. Section 04 20 00, UNIT MASONRY.

1.5 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Certificates:

1. Indicating that following items meet specifications:
   a. Portland cement.
   b. Masonry cement.
   c. Mortar cement.
   d. Hydrated lime.
   e. Fine aggregate (sand).
   f. Color admixture.

C. Laboratory Test Reports:

1. Mortar, each type.

D. Manufacturer's Literature and Data:

1. Cement, each kind.
2. Hydrated lime.
3. Admixtures.
4. Liquid acrylic resin.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver masonry materials in original sealed containers marked with name of manufacturer and identification of contents.

B. Store masonry materials under waterproof covers on planking clear of ground, and protect damage from handling, dirt, stain, water and wind.

1.7 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of specification to extent referenced. Publications are referenced in text by basic designation only.

B. American Society for Testing and Materials (ASTM):

C40-04.....Organic Impurities in Fine Aggregates for Concrete

C91-05.....Masonry Cement
C109-07.....Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-MM Cube Specimens)
C144-04.....Aggregate for Masonry Mortar
C150-05.....Portland Cement
C207-06.....Hydrated Lime for Masonry Purposes
C270-07.....Mortar for Unit Masonry
C307-03.....Tensile Strength of Chemical - Resistant Mortar, Grouts, and Monolithic Surfacing
C321-00/R05.....Bond Strength of Chemical-Resistant Mortars
C348-02.....Flexural Strength of Hydraulic Cement Mortars
C595-08.....Blended Hydraulic Cement
C780-07.....Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
C979-05.....Pigments for Integrally Colored Concrete
C1329-05.....Mortar Cement

PART 2 - PRODUCTS

2.1 HYDRATED LIME

ASTM C207, Type S.

2.2 AGGREGATE FOR MASONRY MORTAR

A. ASTM C144 and as follows:
   1. Light colored sand for mortar for laying face brick.
   2. White plastering sand meeting sieve analysis for mortar joints for pointing.

B. Test sand for color value in accordance with ASTM C40. Sand producing color darker than specified standard is unacceptable.

2.3 BLENDED HYDRAULIC CEMENT

ASTM C595, Type IS, IP.

2.4 MASONRY CEMENT

A. ASTM C91. Type N, S, or M.

B. Use white masonry cement whenever white mortar is specified.

2.5 MORTAR CEMEMT

ASTM C1329, Type N, S or M.

2.6 PORTLAND CEMENT

A. ASTM C150, Type I.

B. Use white Portland cement wherever white mortar is specified.

2.7 WATER

Potable, free of substances that are detrimental to mortar, masonry, and metal.

2.8 POINTING MORTAR

A. For Stone: Proportion by volume; One part white Portland cement, two parts white sand, and 1/5 part hydrated lime.

2.9 MASONRY MORTAR

A. Conform to ASTM C270.

B. Admixtures:

1. Do not use mortar admixtures, except for color admixtures, unless approved by Resident Engineer.
2. Submit laboratory test report showing effect of proposed admixture on strength, water retention, and water repellency of mortar.
3. Do not use antifreeze compounds.

C. Colored Mortar:

1. Maintain uniform mortar color for exposed work throughout.
2. Match mortar color in approved mock-up.
3. Color of mortar for exposed work in repair work to match color of existing mortar.

D. Color Admixtures:

1. Proportion as specified by manufacturer.

2.10 COLOR ADMIXTURE

A. Pigments: ASTM C979.

B. Use mineral pigments only. Organic pigments are not acceptable.

C. Pigments inert, stable to atmospheric conditions, nonfading, alkali resistant and water insoluble.

PART 3 - EXECUTION

3.1 MIXING

A. Mix in a mechanically operated mortar mixer.

1. Mix mortar for at least three minutes but not more than five minutes.

B. Measure ingredients by volume. Measure by the use of a container of known capacity.

C. Mix water with dry ingredients in sufficient amount to provide a workable mixture which will adhere to vertical surfaces of masonry units.

D. Mortar that has stiffened because of loss of water through evaporations:

1. Re-tempered by adding water to restore to proper consistency and workability.
2. Discard mortar that has reached its initial set or has not been used within two hours.

E. Pointing Mortar:

1. Mix dry ingredients with enough water to produce a damp mixture of workable consistency which will retain its shape when formed into a ball.
2. Allow mortar to stand in dampened condition for one to 1-1/2 hours.
3. Add water to bring mortar to a workable consistency prior to application.

3.2 MORTAR USE LOCATION

A. Use Type S mortar for masonry containing vertical reinforcing bars.
B. Use Type N mortar for other masonry work, except as otherwise specified.
C. Use Type N mortar for tuck pointing work.
D. Use pointing mortar for items specified.

- - - E N D - - -

SECTION 04 20 00
UNIT MASONRY

PART 1 - GENERAL

1.1 DESCRIPTION

This section specifies requirements for construction of masonry unit walls.

1.2 RELATED WORK

A. Mortars: Section 04 05 13, MASONRY MORTARING.

B. Sealants and sealant installation: Section 07 92 00, JOINT SEALANTS.

1.3 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA AND SAMPLES.

B. Samples:

1. Face brick, sample panel, 200 mm by 400 mm (8 inches by 16 inches,) showing full color range and texture of bricks, bond, and proposed mortar joints.

C. Certificates:

1. Certificates signed by manufacturer, including name and address of contractor, project location, and the quantity, and date or dates of shipment of delivery to which certificate applies.
2. Indicating that the following items meet specification requirements:
   a. Face brick.

D. Manufacturer's Literature and Data:

1. Anchors, ties, and reinforcement.

1.4 WARRANTY

Warrant exterior masonry walls against moisture leaks and subject to terms of "Warranty of Construction", FAR clause 52.246-21, except that warranty period shall be five years.

1.5 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by the basic designation only.

B. American Society for Testing and Materials (ASTM):

A951-06.....Steel Wire for Masonry Joint Reinforcement.

A615/A615M-07.....Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.

A675/A675M-03.....Standard Specification for Steel Bars, Carbon, Hot-Wrought, Special Quality, Mechanical

PropertiesC34-03 Structural Clay Load-Bearing Wall Tile
C55-06.....Concrete Building Brick
C56-05.....Structural Clay Non-Load-Bearing Tile
C62-05.....Building Brick (Solid Masonry Units Made From Clay or Shale)
C67-07.....Sampling and Testing Brick and Structural Clay Tile
C90-06.....Load-Bearing Concrete Masonry Units
C126-99.....Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units
C216-07.....Facing Brick (Solid Masonry Units Made From Clay or Shale)
C476-02.....Standard Specification for Grout for Masonry
C612-04.....Mineral Fiber Block and Board Thermal Insulation
C744-05.....Prefaced Concrete and Calcium Silicate Masonry Units.
D1056-07.....Flexible Cellular Materials - Sponge or Expanded Rubber
D2000-06.....Rubber Products in Automotive Applications
D2240-05.....Rubber Property - Durometer Hardness
D3574-05.....Flexible Cellular Materials-Slab, Bonded, and Molded Urethane Foams
F1667-05.....Fasteners: Nails, Spikes and Staples

C. Masonry Industry Council:
All Weather Masonry Construction Manual, 2000.

D. American Welding Society (AWS):
D1.4-05 Structural Welding Code – Reinforcing Steel.

E. Federal Specifications (FS):
FF-S-107C-00.....Screws, Tapping and Drive

F. Brick Industry Association - Technical Notes on Brick Construction (BIA):
11-1986.....Guide Specifications for Brick Masonry, Part I
11A–1988.....Guide Specifications for Brick Masonry, Part II
11B–1988.....Guide Specifications for Brick Masonry, Part III Execution
11C-1998.....Guide Specification for Brick Masonry Engineered Brick Masonry, Part IV
11D-1988.....Guide Specifications for Brick Masonry Engineered Brick Masonry, Part IV continued

G. Masonry Standards Joint Committee; Specifications for Masonry Structures (ACI 530.1-05/ASCE 6-05/TMS 602-99) (MSJC).

PART 2 - PRODUCTS

2.1 BRICK

A. Face Brick:
   1. ASTM C216, Grade SW, Type FBS.
   2. Brick when tested in accordance with ASTM C67: Classified slightly efflorescent or better.
   3. Size:
      a. Standard

B. Manufacturer: The Belden Brick Co., Concord Blend “A”, to match existing brick, or approved equal.

2.2 ANCHORS, TIES, AND REINFORCEMENT

A. Steel Reinforcing Bars: ASTM A615M, deformed bars, grade as shown.

B. Joint Reinforcement:
   1. Form from wire complying with ASTM A951.
   2. Galvanized after fabrication.
   3. Width of joint reinforcement 40 mm (0.16 inches) less than nominal width of masonry wall or partition.
   4. Cross wires welded to longitudinal wires.
   5. Joint reinforcement at least 3000 mm (10 feet) in length.
   6. Joint reinforcement in rolls is not acceptable.
   7. Joint reinforcement that is crimped to form drip is not acceptable.
   8. Maximum spacing of cross wires 400 mm (16 inch) to longitudinal wires.
   9. Ladder Design:
      a. Longitudinal wires deformed 5 mm (0.20 inch) diameter wire.
      b. Cross wires 4 mm (0.16 inch) diameter.
   10. Trussed Design:
      a. Longitudinal and cross wires not less than 4 mm (0.16 inch nominal) diameter.
      b. Longitudinal wires deformed.
   11. Multiple Wythes wall ties:
      a. Longitudinal wires 4 mm (0.16 inch), two in each wythe with ladder truss wires 4 mm (0.16 inch) overlay, welded to each longitudinal wire.

C. Individual ties:
   1. Rectangular ties: Form from 5 mm (3/16 inch) diameter galvanized steel rod to a rectangular shape not less than 50 mm (2 inches) wide

by sufficient length for ends of ties to extend within 25 mm (1 inch) of each face of wall. Ties that are crimped to form drip are not permitted.

2.3 ACCESSORIES

A. Weep Hole Wicks: Glass fiber ropes, 10 mm (3/8 inch) minimum diameter, 300 mm (12 inches) long.

B. Copper Sheet Flashing: ASTM B370, cold-rolled temper, weight not less than 1kg/m^2 (3 oz/sf).

PART 3 - EXECUTION

3.1 JOB CONDITIONS

A. Protection:

1. Cover tops of walls with nonstaining waterproof covering, when work is not in progress. Secure to prevent wind blow off.
2. On new work protect base of wall from mud, dirt, mortar droppings, and other materials that will stain face, until final landscaping or other site work is completed.

B. Cold Weather Protection:

1. Masonry may be laid in freezing weather when methods of protection are utilized.
2. Comply with MSJC and “Hot and Cold Weather Masonry Construction Manual”.

3.2 CONSTRUCTION TOLERANCES

A. Lay masonry units plumb, level and true to line within the tolerances as per MSJC requirements and as follows:

B. Maximum variation from plumb:

1. In 3000 mm (10 feet) - 6 mm (1/4 inch).
2. In 6000 mm (20 feet) - 10 mm (3/8 inch).
3. In 12 000 mm (40 feet) or more - 13 mm (1/2 inch).

C. Maximum variation from level:

1. In any bay or up to 6000 mm (20 feet) - 6 mm (1/4 inch).
2. In 12 000 mm (40 feet) or more - 13 mm (1/2 inch).

D. Maximum variation from linear building lines:

1. In any bay or up to 6000 mm (20 feet) - 13 mm (1/2 inch).
2. In 12 000 mm (40 feet) or more - 19 mm (3/4 inch).

E. Maximum variation in cross-sectional dimensions of columns and thickness of walls from dimensions shown:

1. Minus 6 mm (1/4 inch).
2. Plus 13 mm (1/2 inch).

F. Maximum variation in prepared opening dimensions:

1. Accurate to minus 0 mm (0 inch).
2. Plus 6 mm (1/4 inch).

3.3 INSTALLATION GENERAL

A. Keep finish work free from mortar smears or spatters, and leave neat and clean.

B. Tooling Joints:
   1. Do not tool until mortar has stiffened enough to retain thumb print when thumb is pressed against mortar.
   2. Tool while mortar is soft enough to be compressed into joints and not raked out.
   3. Finish joints in exterior face masonry work with a jointing tool, and provide smooth, water-tight concave joint unless specified otherwise.
   4. Tool Exposed interior joints in finish work concave unless specified otherwise.

C. Before connecting new masonry with previously laid, remove loosened masonry or mortar, and clean and wet work in place as specified under wetting.

D. Wetting and Wetting Test:
   1. Test and wet brick or clay tile in accordance with BIA 11B.
   2. Do not wet concrete masonry units or glazed structural facing tile before laying.

3.4 REINFORCEMENT

A. Joint Reinforcement:
   1. Locate joint reinforcement in mortar joints at 400 mm (16 inch) maximum vertical intervals.
   2. Additional joint reinforcement is required in mortar joints at both 200 mm (8 inches) and 400 (16 inches) above and below windows, doors, louvers and similar openings in masonry, except where other type anchors are required for anchorage of masonry to concrete structure.

B. Steel Reinforcing Bars:
   1. Install in wall cavities of reinforced masonry walls where shown.
   2. Use grade 60 bars if not specified otherwise.

3.5 BRICK EXPANSION AND CMU CONTROL JOINTS.

A. Provide brick expansion (BEJ)joints where shown on drawings.

B. Keep joint free of mortar and other debris.

C. Where joints occur in masonry walls.
   1. Install preformed compressible joint filler in brick wythe.
   2. Install backer rod, and sealant on exposed faces.

D. Interrupt steel joint reinforcement at expansion and control joints unless otherwise shown.

E. Fill opening in exposed face of expansion and control joints with sealant as specified in Section 07 92 00, JOINT SEALANTS.

3.6 BRICKWORK

A. Lay clay brick in accordance with BIA Technical Note 11 series.

B. Laying:

1. Lay brick in running bond with course of masonry bonded at corners unless shown otherwise. Match bond of existing building.
2. Maintain bond pattern throughout.
3. Do not use brick smaller than half-brick at any angle, corner, break or jamb.
4. Where length of cut brick is greater than one half but less than a whole brick, maintain the vertical joint location of such units.
5. Lay exposed brickwork joints symmetrical about center lines of openings.

C. Joints:

1. Exterior and interior joint widths: Lay for three equal joints in 200 mm (eight inches) vertically, unless shown otherwise.
2. Rake joints for pointing with colored mortar when colored mortar is not full depth.

D. Weep Holes:

1. Install weep holes at 600 mm (24 inches) on center in bottom of vertical joints of exterior masonry veneer over foundations, bond beams, and other water stops in the wall.
2. Form weep holes using wicks made of mineral fiber insulation strips turned up 200 mm (8 inches) in cavity. Anchor top of strip to backup to securely hold in place.
3. Install sand or pea gravel in cavity approximately 75 mm (3 inches) high between weep holes.

3.7 CLEANING AND REPAIR

A. General:

1. Clean exposed masonry surfaces on completion.
2. Protect adjoining construction materials and landscaping during cleaning operations.
3. Cut out defective exposed new joints to depth of approximately 19 mm (3/4 inch) and repoint.
4. Remove mortar droppings and other foreign substances from wall surfaces.

B. Brickwork:

1. First wet surfaces with clean water, then wash down with a solution of soapless detergent. Do not use muriatic acid.
2. Brush with stiff fiber brushes while washing, and immediately thereafter hose down with clean water.
3. Free clean surfaces of traces of detergent, foreign streaks, or stains of any nature.

- - - E N D - - -

Section 07 92 00
Joint Sealants

PART 1 - General

1.1 Summary
- A. Section includes sealants, joint backing, and accessories.

1.2 References
- A. ASTM C834 – Latex Sealing Compounds.
- B. ASTM C919 – Practice for Use of Sealants in Acoustical Applications.
- C. ASTM C920 – Elastomeric Joint Sealants.
- D. ASTM C1193 – Guide for Use of Joint Sealants.
- E. ASTM D1056 – Flexible Cellular Materials – Sponge or Expanded Rubber.
- F. ASTM D1565 – Flexible Cellular Materials – Vinyl Chloride Polymers and Co-Polymers (Open Cell Foam).
- G. ASTM D1667 – Flexible Cellular Materials – Vinyl Chloride Polymers and Co-Polymers (Closed Cell Foam).
- H. ASTM D2628 – Preformed Polychloroprene Elastomeric Joint Seals for Concrete Pavements.

1.3 Submittals
- A. Product Data: Submit data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability.
- B. Manufacturer's Installation Instructions: Submit special procedures, surface preparation, and perimeter conditions requiring special attention.
- C. Warranty: Include coverage for installed sealants and accessories failing to achieve airtight seal, watertight seal, exhibiting loss of adhesion or cohesion, and sealants which do not cure.

1.4 Environmental Requirements
- A. Maintain temperature and humidity recommended by sealant manufacturer during and after installation.

1.5 Coordination
- A. Coordinate sealant installation with work of sections referencing this section.

PART 2 - Products

2.1 Joint Sealers:
- A. High Performance General Purpose Exterior (Non-traffic) Sealant: Polyurethane, ASTM C920, Grade NS, Class 50, Uses NT, M, A, and O, Type S or M (single or multi-component):
  1. Color: Colors as selected from manufacturer's standard colors to match adjoining surfaces.
  2. Applications: Use for:
     - a. Control, expansion, and soft joints in masonry.
     - b. Joints between concrete and other materials.
     - c. Joints between metal frames and other materials.
     - d. Other exterior non-traffic joints for which no other sealant is specified.
- B. General Purpose Traffic Bearing Sealant: Polyurethane, ASTM C920, Grade P, Class 25, Use T, Type S or M (single or multi-component):
  1. Color: Colors as selected from manufacturer's standard colors to match adjoining surfaces.

2. Applications: Use for exterior and interior pedestrian and vehicular traffic bearing joints.

2.2 Accessories
- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer, compatible with joint forming materials.
- C. Joint Backing: Round foam rod compatible with sealant, oversized 30 to 50 percent larger than joint width.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - Execution

3.1 Examination
- A. Verify substrate surfaces and joint openings are ready to receive work.
- B. Verify joint backing and release tapes are compatible with sealant.

3.2 Preparation
- A. Remove loose materials and foreign matter impairing adhesion of sealant.
- B. Clean and prime joints.
- C. Perform preparation in accordance with ASTM C1193.
- D. Protect elements surrounding work of this section from damage or disfiguration.

3.3 Installation
- A. Perform installation in accordance with ASTM C1193.
- B. Measure joint dimensions and size joint backers to achieve the following, unless otherwise specified by the manufacturer's installation directions:
  1. Width / depth ration of 2:1.
  2. Neck dimension no greater than ½ of joint width.
  3. Surface bond area on each side not less than 75 percent of joint width.
- C. Install bond breaker at bottom of joint where backing is not used to prevent three-sided adhesion.
- D. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- E. Apply sealant within recommended application temperature range. Consult sealant manufacturer when sealant cannot be applied within this range.
- F. Tool joints concave.

3.4 Cleaning
- A. Clean adjacent soiled surfaces.

3.5 Protection of Installed Construction
- A. Protect sealants until cured.
- B. Any sealants that become contaminated before they have cured shall be removed and replaced.

End of Section

SECTION 08 51 13
ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 DESCRIPTION

A. Aluminum windows of type and size shown, complete with hardware, related components and accessories.

B. Types:

1. Fixed
2. Projected

1.2 DEFINITIONS

A. Accessories: Mullions, trim, panning systems, clips, anchors, fasteners, weather-stripping, insect screens, mechanical operators, and other necessary components required for fabrication and installation of window units.

B. Uncontrolled Water: Water not drained to the exterior, or water appearing on the room side of the window.

1.3 DELIVERY, STORAGE AND HANDLING

A. Protect windows from damage during handling and construction operations before, during and after installation.

B. Store windows under cover, setting upright.

C. Do not stack windows flat.

D. Do not lay building materials or equipment on windows.

1.4 QUALITY ASSURANCE

A. Approval by contracting officer is required of products or service of proposed manufacturers and installers.

B. Approval will be based on submission of certification by Contractor that:

1. Manufacturer regularly and presently manufactures the specified windows as one of its principal products.
2. Installer has technical qualifications, experience, trained personnel and facilities to install specified items.

C. Provide each type of window produced from one source of manufacture.

D. Quality Certified Labels or certificate:

1. Architectural Aluminum Manufacturers Association, "AAMA label" affixed to each window indicating compliance with specification.
2. Certificates in lieu of label with copy of recent test report (not more than 4 years old) from an independent testing laboratory and certificate signed by window manufacturer stating that windows

provided comply with specified requirements and AAMA 101/I.S.2 for type of window specified.

1.5 SUBMITTAL

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Shop Drawings:

1. Identifying parts of window units by name and kind of metal or material, show construction, locking systems, mechanical operators, trim, installation and anchorages.
2. Include glazing details and standards for factory glazed units.

C. Manufacturer's Literature and Data:

Window.

Sash locks, keepers, and key.

D. Certificates:

1. Certificates as specified in paragraph QUALITY ASSURANCE.
2. Indicating manufacturers and installers qualifications.
3. Manufacturer's Certification that windows delivered to project are identical to windows tested.

E. Test Reports:

Copies of test reports as specified in paragraph QUALITY ASSURANCE.

1.7 WARRANTY

Warrant windows against malfunctions due to defects in thermal breaks, hardware, materials and workmanship, subject to the terms of Article “WARRANTY OF CONSTRUCTION”, FAR clause 52.246-21, except provide 10 year warranty period.

1.8 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to extent referenced. Publications are referenced in text by basic designation only.

B. American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE)

90.1-04.....Energy Standard of Buildings

C. American Architectural Manufacturers Association (AAMA):

101/I.S.2/A440-05.....Windows, Doors, and Unit Skylights

505-98.....Dry Shrinkage and Composite Performance Thermal Cycling Test Procedures

2605-05.....Superior Performing Organic Coatings on Architectural Aluminum Extrusions and Panels

TIR-A8-04.....Structural Performance of Poured and Debridged Framing Systems

D. American Society for Testing and Materials (ASTM):

A653/A653M-07.....Steel Sheet, Zinc Coated (Galvanized), Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-dip Process

E 90-04.....Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions

E. National Fenestration Rating Council (NFRC):

NFRC 100-04.....Determining Fenestration Product U-Factors

NFRC 200-04.....Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence

F. National Association of Architectural Metal Manufacturers (NAAMM):

AMP 500 Series.....Metal Finishes Manual

PART 2- PRODUCTS

2.1 MATERIALS

A. Aluminum Extrusions; Sheet and Plate: AAMA 101/I.S.2.

B. Sheet Steel, Galvanized: ASTM A653; G90 galvanized coating.

C. Weather-strips: AAMA 101/I.S.2; except leaf type weather-stripping is not permitted.

D. Insect Screening:

1. Regular mesh, 18 by 18, AAMA 101/I.S.2.
2. Aluminum with dark bronze anodized finish unless specified otherwise.

E. Fasteners: AAMA 101/I.S.2. Screws, bolts, nuts, rivets and other fastening devices to be non-magnetic stainless steel.

1. Fasteners to be concealed when window is closed. Where wall thickness is less than 3 mm (0.125 inch) thick, provide backup plates or similar reinforcements for fasteners.
2. Stainless steel self tapping screws may be used to secure Venetian blind hanger clips, vent guide blocks, friction adjuster, and limit opening device.
3. Attach locking and hold-open devices to windows with concealed fasteners. Provide reinforcing plates where wall thickness is less than 3 mm (0.125 inch) thick.

F. Weather-strips: AAMA 101/I.S.2.

G. Hardware:

1. Locks: Two position locking bolts or cam type tamperproof custodial locks with a single point control located not higher than five feet from floor level. Locate locking devices in the vent side rail. Fastenings for locks and keepers shall be concealed or nonremovable.
2. Locking Device Strikes: Locate strikes in frame jamb. Strikes shall be adjustable for locking tension. Fabricate strikes from Type 304 stainless steel or white bronze.
3. Fabricate hinges of noncorrosive metal. Hinges may be either fully concealed when window is closed or semi-concealed with exposed knuckles. All exposed knuckle hinges shall have hospital tips, at both ends. Surface mounted hinges will not be accepted.
4. Guide Blocks: Fabricate guide blocks of injection molded nylon. Install guide block fully concealed in vent/frame sill.
5. Hardware for Emergency Ventilation of Windows:
   a. Provide windows with a hold open linkage for emergency ventilation.
   b. Hold open hardware shall provide for maximum six inches of window opening and shall include an adjustable friction shoe to provide resistance when closing the window.
   c. Handles shall be removable.
6. Hardware for Maintenance Opening of Windows: Opening beyond the six inch position shall be accomplished with a window washers key. The release device shall capture the key when window is in the open position.
7. Design operating device to prevent opening with standard tools, coins or bent wire devices.

H. Pole Operators:

1. Provide pole operator and pole hanger where operable windows have hardware more than 1500 mm five feet) above the floor, but not over 3000 mm (10 feet) above floor.
2. Fabricate pole of tubular anodized aluminum with rubber cap at lower end and standard push-pull hook at top end to match hardware design.
3. Provide sufficient length for window operation without reaching more than 1500 mm (five feet) above floor.

2.2 INSULATING GLASS UNITS

A. Provide factory fabricated, hermetically sealed glass unit consisting of two panes of glass separated by a dehydrated air space.

B. Sealed Edge Units (SEU):
   1. Conform to ASTM E774, Class C performance requirements.
   2. Air Space not less than 13 mm (½ inch) wide.
   3. Winter U-value: 0.28 or lower.
   4. Summer U-value: 0.26 or lower.
   5. Solar Heat Gain Coefficient: 0.37 or lower.

C. SEU Clear Glass:
   1. Exterior pane Clear Glass 6 mm (1/4 inch) thick.

D. SEU Tempered Glass:
   1. Interior pane ASTM C1048, Kind FT, Condition A, Type I, Class 1, Quality q3, low-E coating on third surface 6 mm (1/4 inch) thick.

2.3 THERMAL AND CONDENSATION PERFORMANCE

A. Condensation Resistance Factor (CRF): Minimum CRF of C 50.

B. Thermal Transmittance:
   1. Maximum U value class for insulating glass windows: 60 (U=0.60).

2.4 FABRICATION

A. Fabrication to exceed or meet requirements of Physical Load Tests, Air Infiltration Test, and Water Resistance Test of AAMA 101/I.S.2.

B. Glazing:
   1. Factory or field glazing optional.
   2. Windows reglazable without dismantling sash framing.
   4. Design rabbet to suit glass thickness and glazing method specified.
   5. Glaze from interior except where not accessible.
   7. Provide removable fin type glazing beads.

C. Trim:
   1. Trim includes casings, closures, and panning.
   2. Fabricate to shapes shown of aluminum not less than 1.6 mm (0.062 inch) thick
   3. Extruded or formed sections, straight, true, and smooth on exposed surfaces.
   4. Exposed external corners mitered and internal corners coped; fitted with hairline joints.
   5. Reinforce 1.6 mm (0.062 inch) thick members with not less than 3 mm (1/8-inch) thick aluminum.
   6. Except for strap anchors, provide reinforcing for fastening near ends and at intervals not more than 305 mm (12 inches) between ends.
   7. Design to allow unrestricted expansion and contraction of members and window frames.

8. Secure to window frames with machine screws or expansion rivets.
9. Exposed screws, fasteners or pop rivets are not acceptable on exterior of the casing or trim cover system.

D. Thermal-Break Construction:
1. Manufacturer’s Standard.
2. Low conductance thermal barrier.
3. Capable of structurally holding sash in position and together.
4. All Thermal Break Assemblies (Pour & Debridge, Insulbar or others) shall be tested as per AAMA TIR A8 and AAMA 505 for Dry Shrinkage and Composite Performance.
5. Location of thermal barrier and design of window shall be such that, in closed position, outside air shall not come in direct contact with interior frame of the window.

E. Subsills and Stools:
1. Fabricate to shapes shown of not less than 2 mm (0.080 inch) thick extruded aluminum.
2. One piece full length of opening with concealed anchors.
3. Sills turned up back edge not less than 6 mm (1/4 inch). Front edge provide with drip.
4. Sill back edge behind face of window frame. Do not extend to interior surface or bridge thermal breaks.
5. Do not perforate for anchorage, clip screws, or other requirements.

F. Insect Screens:
1. AAMA 101/I.S.2.
2. Aluminum screen cloth.

2.5 PROJECTED WINDOWS

A. AAMA 101/I.S.2; Type: C-H65.
B. AAMA certified product to the AAMA 101/I.S.2. - 97 standard.
C. Operation:Project-out and slide down from top.

2.6 FINISH

A. In accordance with NAAMM AMP 500 series.
B. Finish exposed aluminum surfaces as follows:
1. Anodized Aluminum:
a. Finish in accordance with AMP 501 letters and numbers.
b. Clear anodized Finish: AA-C22A41 Medium matte, clear anodic coating, Class 1 Architectural, 0.7 mils thick.

C. Hardware: Finish hardware exposed when window is in the closed position: Match window color.

PART 3 - EXECUTION

3.1 PROTECTION (DISSIMILAR MATERIALS): AAMA 101/I.S.2.

3.2 INSTALLATION, GENERAL

A. Install window units in accordance with manufacturer's specifications and recommendations for installation of window units, hardware, operators and other components of work.

B. Where type, size or spacing of fastenings for securing window accessories or equipment to building construction is not shown or specified, use expansion or toggle bolts or screws, as best suited to construction material.
   1. Provide bolts or screws minimum 6 mm (1/4-inch) in diameter.
   2. Sized and spaced to resist the tensile and shear loads imposed.
   3. Do not use exposed fasteners on exterior, except when unavoidable for application of hardware.
   4. Provide non-magnetic stainless steel Phillips flat-head machine screws for exposed fasteners, where required, or special tamper-proof fasteners.
   5. Locate fasteners to not disturb the thermal break construction of windows.

C. Set windows plumb, level, true, and in alignment; without warp or rack of frames or sash.

D. Anchor windows on four sides with anchor clips.
   1. Do not allow anchor clips to bridge thermal breaks.
   2. Use separate clips for each side of thermal breaks.
   3. Make connections to allow for thermal and other movements.
   4. Do not allow building load to bear on windows.
   5. Use manufacturer's standard clips at corners and not over 600 mm (24 inches) on center.

E. Replacement Windows:
   1. Do not remove existing windows until new replacement is available, ready for immediate installation.
   2. Remove existing work carefully; avoid damage to existing work to remain.
   3. Perform all other operations as necessary to prepare openings for proper installation and operation of new units.
   4. Do not leave openings uncovered at end of working day, during precipitation or temperatures below 16 degrees C (60 degrees F.).

3.3 CLOSURES, TRIM, AND PANNING

A. Closures, Trim, and Panning: External corners mitered and internal corners coped, fitted with hairline, tightly closed joints.

C. Secure to concrete or solid masonry with expansion bolts, expansion rivets, split shank drive bolts, or powder actuated drive pins.

D. Toggle bolt to hollow masonry units. Screwed to wood or metal.

E. Fasten except for strap anchors, near ends and corners and at intervals not more than 300 mm (12 inches) between.

F. Seal units following installation to provide weathertight system.

3.4 ADJUST AND CLEAN

A. Adjust ventilating sash and hardware to provide tight fit at contact points, and at weather-stripping for smooth operation and weathertight closure.

B. Clean aluminum surfaces promptly after installation of windows, exercising care to avoid damage to protective coatings and finishes.

C. Remove excess glazing and sealant compounds, dirt, and other substances.

D. Lubricate hardware and moving parts.

E. Clean glass promptly after installation of windows. Remove glazing and sealant compound, dirt and other substances.

F. Except when a window is being adjusted or tested, keep locked in the closed position during the progress of work on the project.

3.5 OPERATION DEVICES

A. Provide wrenches, keys, or removable locking operating handles, as specified to operate windows.

B. Provide one operating pole and one pole hanger in a room or space where pole operation of windows is required.

- - - E N D - - -

SECTION 09 91 00
PAINTING

PART 1-GENERAL

1.1 DESCRIPTION

A. Section specifies field painting.

1.2 SUBMITTALS

A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.

B. Manufacturer's Literature and Data:
Before work is started, or sample panels are prepared, submit manufacturer's literature, the current Master Painters Institute (MPI) "Approved Product List" indicating brand label, product name and product code as of the date of contract award, will be used to determine compliance with the submittal requirements of this specification. The Contractor may choose to use subsequent MPI "Approved Product List", however, only one list may be used for the entire contract and each coating system is to be from a single manufacturer. All coats on a particular substrate must be from a single manufacturer. No variation from the MPI "Approved Product List" where applicable is acceptable.

C. Manufacturers' Certificates indicating compliance with specified requirements.

1.3 DELIVERY AND STORAGE

A. Deliver materials to site in manufacturer's sealed container marked to show following:
1. Name of manufacturer.
2. Product type.
3. Batch number.
4. Instructions for use.
5. Safety precautions.

B. In addition to manufacturer's label, provide a label legibly printed as following:
1. Federal Specification Number, where applicable, and name of material.
2. Surface upon which material is to be applied.
3. If paint or other coating, state coat types; prime, body or finish.

C. Maintain space for storage, and handling of painting materials and equipment in a neat and orderly condition to prevent spontaneous combustion from occurring or igniting adjacent items.

D. Store materials at site at least 24 hours before using, at a temperature between 18 and 30 degrees C (65 and 85 degrees F).

1.4 APPLICABLE PUBLICATIONS

A. Publications listed below form a part of this specification to the extent referenced. Publications are referenced in the text by basic designation only.

B. American Conference of Governmental Industrial Hygienists (ACGIH):

ACGIH TLV-BKLT-1992.....Threshold Limit Values (TLV) for Chemical Substances and Physical Agents and Biological Exposure Indices (BEIs)

ACGIH TLV-DOC.....Documentation of Threshold Limit Values and Biological Exposure Indices, (Sixth Edition)

C. American National Standards Institute (ANSI):

A13.1-96.....Scheme for the Identification of Piping Systems

D. American Society for Testing and Materials (ASTM):

D260-86.....Boiled Linseed Oil

E. Commercial Item Description (CID):

A-A-1555.....Water Paint, Powder (Cementitious, White and Colors) (WPC) (cancelled)

A-A-3120.....Paint, For Swimming Pools (RF) (cancelled)

F. Federal Specifications (Fed Spec):

TT-P-1411A.....Paint, Copolymer-Resin, Cementitious (For Waterproofing Concrete and Masonry Walls) (CEP)

G. Master Painters Institute (MPI):

No. 1-06.....Aluminum Paint (AP)

No. 4-06.....Interior/ Exterior Latex Block Filler

No. 5-06.....Exterior Alkyd Wood Primer

No. 7-06.....Exterior Oil Wood Primer

No. 8-06.....Exterior Alkyd, Flat MPI Gloss Level 1 (EO)

No. 9-06.....Exterior Alkyd Enamel MPI Gloss Level 6 (EO)

No. 10-06.....Exterior Latex, Flat (AE)

No. 11-06.....Exterior Latex, Semi-Gloss (AE)

No. 18-06.....Organic Zinc Rich Primer

No. 22-06.....Aluminum Paint, High Heat (up to 590% - 1100F) (HR)

No. 26-06.....Cementitious Galvanized Metal Primer

No. 27-06.....Exterior / Interior Alkyd Floor Enamel, Gloss (FE)

No. 31-06.....Polyurethane, Moisture Cured, Clear Gloss (PV)

No. 36-06.....Knot Sealer

No. 43-06.....Interior Satin Latex, MPI Gloss Level 4

No. 44-06.....Interior Low Sheen Latex, MPI Gloss Level 2

No. 45-06.....Interior Primer Sealer
No. 46-06.....Interior Enamel Undercoat
No. 47-06.....Interior Alkyd, Semi-Gloss, MPI Gloss Level 5 (AK)
No. 48-06.....Interior Alkyd, Gloss, MPI Gloss Level 6 (AK)
No. 49-06.....Interior Alkyd, Flat, MPI Gloss Level 1 (AK)
No. 50-06.....Interior Latex Primer Sealer
No. 51-06.....Interior Alkyd, Eggshell, MPI Gloss Level 3
No. 52-06.....Interior Latex, MPI Gloss Level 3 (LE)
No. 53-06.....Interior Latex, Flat, MPI Gloss Level 1 (LE)
No. 54-06.....Interior Latex, Semi-Gloss, MPI Gloss Level 5 (LE)
No. 59-06.....Interior/Exterior Alkyd Porch & Floor Enamel, Low Gloss (FE)
No. 60-06.....Interior/Exterior Latex Porch & Floor Paint, Low Gloss
No. 66-06.....Interior Alkyd Fire Retardant, Clear Top-Coat (ULC Approved) (FC)
No. 67-06.....Interior Latex Fire Retardant, Top-Coat (ULC Approved) (FR)
No. 68-06.....Interior/ Exterior Latex Porch & Floor Paint, Gloss
No. 71-06.....Polyurethane, Moisture Cured, Clear, Flat (PV)
No. 74-06.....Interior Alkyd Varnish, Semi-Gloss
No. 77-06.....Epoxy Cold Cured, Gloss (EC)
No. 79-06.....Marine Alkyd Metal Primer
No. 90-06.....Interior Wood Stain, Semi-Transparent (WS)
No. 91-06.....Wood Filler Paste
No. 94-06.....Exterior Alkyd, Semi-Gloss (EO)
No. 95-06.....Fast Drying Metal Primer
No. 98-06.....High Build Epoxy Coating
No. 101-06.....Epoxy Anti-Corrosive Metal Primer
No. 108-06.....High Build Epoxy Coating, Low Gloss (EC)
No. 114-06.....Interior Latex, Gloss (LE) and (LG)
No. 119-06.....Exterior Latex, High Gloss (acrylic) (AE)
No. 135-06.....Non-Cementitious Galvanized Primer
No. 138-06.....Interior High Performance Latex, MPI Gloss Level 2 (LF)
No. 139-06.....Interior High Performance Latex, MPI Gloss Level 3 (LL)
No. 140-06.....Interior High Performance Latex, MPI Gloss Level 4

No. 141-06.....Interior High Performance Latex (SG) MPI Gloss Level 5

H. Steel Structures Painting Council (SSPC):
SSPC SP 1-00 (R2004)....Solvent Cleaning
SSPC SP 2-00 (R2004)....Hand Tool Cleaning
SSPC SP 3-00 (R2004)....Power Tool Cleaning

PART 2 - PRODUCTS

2.1 MATERIALS

A. Wood Sealer: MPI 31 (gloss) or MPI 71 (flat) thinned with thinner recommended by manufacturer at rate of about one part of thinner to four parts of varnish.
B. Interior/Exterior Latex Block Filler: MPI 4.
D. Exterior Alkyd Wood Primer: MPI 5.
D. Exterior Oil Wood Primer: MPI 7.
E. Exterior Alkyd, Flat (EO): MPI 8.
F. Exterior Alkyd Enamel (EO): MPI 9.
G. Exterior Latex, Flat (AE): MPI 10.
H. Exterior Latex, Semi-Gloss (AE): MPI 11.
I. Organic Zinc rich Coating (HR): MPI 22.
J. High Heat Resistant Coating (HR): MPI 22.
K. Cementitious Galvanized Metal Primer: MPI 26.
L. Knot Sealer: MPI 36.
M. Marine Alkyd Metal primer: MPI 79.
N. Wood Filler Paste: MPI 91.
O. Exterior Alkyd, Semi-Gloss (EO): MPI 94.
P. Fast Drying Metal Primer: MPI 95.
Q. High Build Epoxy Coating: MPI 98.
R. Epoxy Anti-Corrosive Metal Primer: MPI 101.
S. High Build Epoxy Marine Coating (EC): MPI 108.
T. Waterborne Galvanized Primer: MPI 134.
U. Non-Cementitious Galvanized Primer: MPI 135.

2.2 PAINT PROPERTIES

A. Use ready-mixed (including colors), except two component epoxies, polyurethanes, polyesters, paints having metallic powders packaged separately and paints requiring specified additives.
B. Where no requirements are given in the referenced specifications for primers, use primers with pigment and vehicle, compatible with substrate and finish coats specified.

2.3 REGULATORY REQUIREMENTS/QUALITY ASSURANCE

A. Paint materials shall conform to the restrictions of the local Environmental and Toxic Control jurisdiction.

1. Volatile Organic Compounds (VOC): VOC content of paint materials shall not exceed 10g/l for interior latex paints/primers and 50g/l for exterior latex paints and primers.
2. Lead-Base Paint:
   a. Comply with Section 410 of the Lead-Based Paint Poisoning Prevention Act, as amended, and with implementing regulations promulgated by Secretary of Housing and Urban Development.
   b. Regulations concerning prohibition against use of lead-based paint in federal and federally assisted construction, or rehabilitation of residential structures are set forth in Subpart F, Title 24, Code of Federal Regulations, Department of Housing and Urban Development.
   c. Contractor shall assume all existing paint is lead containing material and comply with applicable regulations when working with existing materials.
3. Asbestos: Materials shall not contain asbestos.
4. Chromate, Cadmium, Mercury, and Silica: Materials shall not contain zinc-chromate, strontium-chromate, Cadmium, mercury or mercury compounds or free crystalline silica.
5. Human Carcinogens: Materials shall not contain any of the ACGIH-BKLT and ACGHI-DOC confirmed or suspected human carcinogens.
6. Use high performance acrylic paints in place of alkyd paints, where possible.
7. VOC content for solvent-based paints shall not exceed 250g/l and shall not be formulated with more than one percent aromatic hydro carbons by weight.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

A. Safety: Observe required safety regulations and manufacturer's warning and instructions for storage, handling and application of painting materials.

1. Take necessary precautions to protect personnel and property from hazards due to falls, injuries, toxic fumes, fire, explosion, or other harm.
2. Deposit soiled cleaning rags and waste materials in metal containers approved for that purpose. Dispose of such items off the site at end of each days work.

B. Atmospheric and Surface Conditions:

1. Do not apply coating when air or substrate conditions are:
   a. Less than 3 degrees C (5 degrees F) above dew point.
   b. Below 10 degrees C (50 degrees F) or over 35 degrees C (95 degrees F), unless specifically pre-approved by the Contracting Officer and the product manufacturer. Under no circumstances shall application conditions exceed manufacturer recommendations.
2. Maintain interior temperatures until paint dries hard.
3. Do no exterior painting when it is windy and dusty.
4. Do not paint in direct sunlight or on surfaces that the sun will soon warm.
5. Apply only on clean, dry and frost free surfaces except as follows:
   a. Apply water thinned acrylic and cementitious paints to damp (not wet) surfaces where allowed by manufacturer's printed instructions.
   b. Dampened with a fine mist of water on hot dry days concrete and masonry surfaces to which water thinned acrylic and cementitious paints are applied to prevent excessive suction and to cool surface.

3.2 SURFACE PREPARATION

A. Method of surface preparation is optional, provided results of finish painting produce solid even color and texture specified with no overlays.

B. General:
   1. Remove prefinished items not to be painted such as lighting fixtures, escutcheon plates, hardware, trim, and similar items for reinstallation after paint is dried.
   2. Remove items for reinstallation and complete painting of such items and adjacent areas when item or adjacent surface is not accessible or finish is different.
   3. See other sections of specifications for specified surface conditions and prime coat.
   4. Clean surfaces for painting with materials and methods compatible with substrate and specified finish. Remove any residue remaining from cleaning agents used. Do not use solvents, acid, or steam on concrete and masonry.

C. Wood:
   1. Sand to a smooth even surface and then dust off.
   2. Sand surfaces showing raised grain smooth between each coat.
   3. Wipe surface with a tack rag prior to applying finish.
   4. Surface painted with an opaque finish:
      a. Coat knots, sap and pitch streaks with MPI 36 (Knot Sealer) before applying paint.

b. Apply two coats of MPI 36 (Knot Sealer) over large knots.

5. After application of prime or first coat of stain, fill cracks, nail and screw holes, depressions and similar defects with wood filler paste. Sand the surface to make smooth and finish flush with adjacent surface.
6. Before applying finish coat, reapply wood filler paste if required, and sand surface to remove surface blemishes. Finish flush with adjacent surfaces.

D. Ferrous Metals:

1. Remove oil, grease, soil, drawing and cutting compounds, flux and other detrimental foreign matter in accordance with SSPC-SP 1 (Solvent Cleaning).
2. Remove loose mill scale, rust, and paint, by hand or power tool cleaning, as defined in SSPC-SP 2 (Hand Tool Cleaning) and SSPC-SP 3 (Power Tool Cleaning).
3. Fill dents, holes and similar voids and depressions in flat exposed surfaces of hollow steel doors and frames, access panels, roll-up steel doors and similar items specified to have semi-gloss or gloss finish with TT-F-322D (Filler, Two-Component Type, For Dents, Small Holes and Blow-Holes). Finish flush with adjacent surfaces.
   a. This includes flat head countersunk screws used for permanent anchors.
   b. Do not fill screws of item intended for removal such as glazing beads.
4. Spot prime abraded and damaged areas in shop prime coat which expose bare metal with same type of paint used for prime coat. Feather edge of spot prime to produce smooth finish coat.
5. Spot prime abraded and damaged areas which expose bare metal of factory finished items with paint as recommended by manufacturer of item.

E. Zinc-Coated (Galvanized) Metal, Surfaces Specified Painted:

1. Clean surfaces to remove grease, oil and other deterrents to paint adhesion in accordance with SSPC-SP 1 (Solvent Cleaning).
2. Spot coat abraded and damaged areas of zinc-coating which expose base metal on hot-dip zinc-coated items with MPI 18 (Organic Zinc Rich Coating). Prime or spot prime with MPI 134 (Waterborne Galvanized Primer) or MPI 135 (Non- Cementitious Galvanized Primer) depending on finish coat compatibility.

F. Masonry, Concrete, Cement Plaster:

1. Clean and remove dust, dirt, oil, grease efflorescence, form release agents, laitance, and other deterrents to paint adhesion.

2. Use emulsion type cleaning agents to remove oil, grease, paint and similar products. Use of solvents, acid, or steam is not permitted.
3. Remove loose mortar in masonry work.
4. Replace mortar and fill open joints, holes, cracks and depressions with new mortar specified in Section 04 05 13, MASONRY MORTARING. Do not fill weep holes. Finish to match adjacent surfaces.
5. Repair broken and spalled concrete edges with concrete patching compound to match adjacent surfaces. Remove projections to level of adjacent surface by grinding or similar methods.

3.3 PAINT PREPARATION

A. Thoroughly mix painting materials to ensure uniformity of color, complete dispersion of pigment and uniform composition.
B. Do not thin unless necessary for application and when finish paint is used for body and prime coats. Use materials and quantities for thinning as specified in manufacturer's printed instructions.
C. Remove paint skins, then strain paint through commercial paint strainer to remove lumps and other particles.
D. Mix two component and two part paint and those requiring additives in such a manner as to uniformly blend as specified in manufacturer's printed instructions unless specified otherwise.
E. For tinting required to produce exact shades specified, use color pigment recommended by the paint manufacturer.

3.4 APPLICATION

A. Start of surface preparation or painting will be construed as acceptance of the surface as satisfactory for the application of materials.
B. Unless otherwise specified, apply paint in three coats; prime, body, and finish. When two coats applied to prime coat are the same, first coat applied over primer is body coat and second coat is finish coat.
C. Apply each coat evenly and cover substrate completely.
D. Allow not less than 48 hours between application of succeeding coats, except as allowed by manufacturer's printed instructions, and approved by Resident Engineer.
E. Finish surfaces to show solid even color, free from runs, lumps, brushmarks, laps, holidays, or other defects.
F. Apply by brush, roller or spray, except as otherwise specified.
G. Do not spray paint in existing occupied spaces unless approved by Resident Engineer, except in spaces sealed from existing occupied spaces.
   1. Apply painting materials specifically required by manufacturer to be applied by spraying.

2. In areas, where paint is applied by spray, mask or enclose with polyethylene, or similar air tight material with edges and seams continuously sealed including items specified in WORK NOT PAINTED, motors, controls, telephone, electrical equipment, and other recessed equipment and similar prefinished items.

I. Do not paint in closed position operable items such as access doors and panels, window sashes, overhead doors, and similar items except overhead roll-up doors and shutters.

3.5 PRIME PAINTING

A. After surface preparation prime surfaces before application of body and finish coats, except as otherwise specified.

B. Spot prime and apply body coat to damaged and abraded painted surfaces before applying succeeding coats.

C. Additional field applied prime coats over shop or factory applied prime coats are not required except for exterior exposed steel apply an additional prime coat.

D. Prime rebates for stop and face glazing of wood, and for face glazing of steel.

E. Wood and Wood Particleboard:

1. Use same kind of primer specified for exposed face surface.

a. Exterior wood: MPI 7 (Exterior Oil Wood Primer) for new construction and MPI 5(Exterior Alkyd Wood Primer) for repainting bare wood primer.

F. Metals except boilers, incinerator stacks, and engine exhaust pipes:

1. Steel and iron: MPI 79 (Marine Alkyd Metal Primer).

2. Zinc-coated steel and iron: MPI 134 (Waterborne Galvanized Primer).

3. Aluminum scheduled to be painted: MPI 95 (Fast Drying Metal Primer).

3.6 EXTERIOR FINISHES

A. Apply following finish coats where specified.

B. Wood:

1. Do not apply finish coats on surfaces concealed after installation, top and bottom edges of wood doors and sash, or on edges of wood framed insect screens.

2. Two coats of MPI 15 Exterior Latex, Low Sheen.

C. Steel and Ferrous Metal:

1. Two coats of MPI 94 (Exterior Alkyd, Quick Dry Semi-Gloss) on exposed surfaces.

D. Concrete Masonry Units, Cement Plaster, Concrete:

1. One coat of MPI 4 Block Filler, Latex, Interior/Exterior on un-painted surfaces.
2. Two coats of MPI 15 Exterior Latex, Low Sheen.

3.7 REFINISHING EXISTING PAINTED SURFACES

A. Clean, patch and repair existing surfaces as specified under surface preparation.
B. Remove and reinstall items as specified under surface preparation.
C. Remove existing finishes or apply separation coats to prevent non compatible coatings from having contact.
D. Patched or Replaced Areas in Surfaces and Components: Apply spot prime and body coats as specified for new work to repaired areas or replaced components.
E. Except where scheduled for complete painting apply finish coat over plane surface to nearest break in plane, such as corner, reveal, or frame.
F. Refinish areas as specified for new work to match adjoining work unless specified or scheduled otherwise.
G. Coat knots and pitch streaks showing through old finish with MPI 36 (Knot Sealer) before refinishing.
H. Sand or dull glossy surfaces prior to painting.
I. Sand existing coatings to a feather edge so that transition between new and existing finish will not show in finished work.

3.8 PAINT COLOR

A. Color of finish coats:
   1. Exposed lintels: Color to be equivalent to Sherwin-Williams SW4021-Filament.
   2. CMU walls indicated to be painted: Color to be equivalent to Sherwin-Williams SW6116-Tatami Tan.
   3. Door frames indicated to be painted: Color to match existing custom Sherwin-Williams color paint color “VA Hospital Seal Brown”.
   4. Door surrounds and related work with existing white paint: Color to be equivalent to Sherwin-Williams SW7035-Aesthetic White.
C. Coat Colors:
   1. Color of priming coat: Lighter than body coat.
   2. Color of body coat: Lighter than finish coat.
   3. Color prime and body coats to not show through the finish coat and to mask surface imperfections or contrasts.

3.9 PROTECTION CLEAN UP, AND TOUCH-UP

A. Protect work from paint droppings and spattering by use of masking, drop cloths, removal of items or by other approved methods.

B. Upon completion, clean paint from hardware, glass and other surfaces and items not required to be painted of paint drops or smears.
C. Before final inspection, touch-up or refinished in a manner to produce solid even color and finish texture, free from defects in work which was damaged or discolored.

- - - E N D - - -